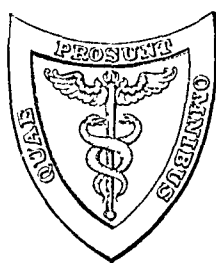


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THE
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CREASOTE AS A REMEDY IN PHTHISIS PULMONALIS.¹

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THE use of creasote in the treatment of phthisis pulmonalis dates back to 1830, the year in which it was discovered by Reichenbach, of Blausko, in Moravia. Later on, it fell into disuse, like some other valuable medicaments, and for nearly thirty years previous to 1877 it was practically of little or no importance in the therapeutics of pulmonary disease. At the date just referred to, Drs. Bouchard and Gimbert again revived interest in this drug by publishing a very complete article in the *Gazette Hebdomadaire*, of Paris,² on its beneficial effects in consumption. They claimed for it excellent results, and for careful, learned, and honest observers, their account was as nearly enthusiastic as thorough work is apt to be.

Shortly after reading of the observations of Bouchard and Gimbert, I began to use creasote in the treatment of pulmonary phthisis, and in a clinical lecture delivered at the Bellevue Hospital Medical College, and published in the *Medical Record* of September 21, 1878, page 223, I mention in what manner I have used it and with what results in the following terms:

"For several months, both in the Outdoor Department of the New York Hospital, at Charity Hospital and elsewhere, I have given dessert-spoonful doses of the *mistura creasoti* of our *Pharmacopœia* to lessen the quantity of sputa in phthisis. I am very much pleased with this remedy, and believe

¹ Read before the Association of American Physicians, Washington, 1888.

² Pages 486, 504, 522, and 620.

it merits a very extensive trial. No doubt, in lessening the abundance of expectoration, it also diminishes the frequency of cough."

At that time, I would add, I regarded creasote as being only a good anti-catarrhal agent, to be ranked high amongst some analogous remedial substances whose main action consisted in the diminution of the amount of purulent sputa, but which had little or no curative effect upon the essential lesions of pulmonary phthisis, as we understand them.

From 1878 until 1885, the year when Jaccoud's treatise on pulmonary phthisis, translated by Montague Lubbock, was published, I continued to make use of creasote from time to time, but without watching carefully its effects, or believing that we had discovered, in the employment of this drug, a very valuable addition to our usual medicinal means of treating pulmonary phthisis. Jaccoud's statements about the advantages resulting from the internal exhibition of creasote in this disease impressed me very much, and from the time I first read them to the present date, I have prescribed creasote very frequently in pulmonary phthisis, and, usually, with marked beneficial effects.

About the period when Jaccoud's work was first published, the employment of antiseptic inhalations in the treatment of this disease interested me, and amongst the substances of which I made extensive use none seemed to me of more value than creasote. A great deal of what I could even now say with truth, in regard to the utility and evident results of antiseptic inhalations in the treatment of pulmonary phthisis, can be found by reference to a paper read by me on this subject, at the second annual meeting of the American Climatological Association, held in New York City, May 27, 1885, and, also, in a clinical lecture entitled "Modern Methods of Treatment of Pulmonary Phthisis," which was delivered before the students of the Bellevue Hospital Medical College, October 27, 1885, and was published in the *New York Medical Journal* of November 14, 1885, page 535. In the issue of the *Journal* of that date, the following occurs :

"I have employed at different times a large number of inhaling fluids and many different combinations. The fluid and combination to which I now give the preference are creasote and alcohol, equal parts, to which I also frequently add a like proportion of spirits of chloroform. This combination is certainly very useful in allaying cough and modifying the quantity and quality of the sputa in pulmonary phthisis. I, therefore, recommend it very warmly. The alcohol is added to the creasote for the double purpose of diluting it and making it more volatile; the spirits of chloroform are added, in view of the experience of Dr. J. Solis-Cohen, of Philadelphia, to diminish local irritation and excessive cough. . . . Properly and judiciously employed, the creasote inhalant relieves symptoms notably, and in the beginning, at least, of pulmonary phthisis is, I believe, a means of decided utility, so far as the possible arrest of the disease is concerned. It is important that *beechwood creasote* be employed. . . . Precisely the way in which creasote is most

useful is, perhaps, difficult to state. By its antiseptic action it is possibly destructive of bacilli; by its local action and general effect it is certainly of value in combating catarrhal conditions. Where purulent cavities exist, it tends to destroy, or neutralize, putridity. These are certainly sufficiently good reasons for its use without pursuing the inquiry further. At all events, these inhalations do good. The physician notices it, and the patient affirms it. In many instances they allay cough better than any cough mixture, and they are certainly free from the great objection of destroying appetite, as opium and morphine so frequently do."

I mention the preceding facts to show, as I trust I have been able to do, that *my* interest in, and experience of, the good effects of creasote in the treatment of pulmonary phthisis date back already several years, and is by no means the outgrowth of later observations which have come to us mainly from Germany, and at the hands of Fräntzel,¹ Sommerbrodt,² Guttman,³ Lublinski,⁴ etc.

And here I would like to add a word of praise for that very distinguished therapeutician, Dr. Dujardin-Beaumetz, who, in his remarkable work on clinical therapeutics,⁵ has given corroborative testimony which, in my mind, has increased the importance of creasote as a valuable therapeutic addition to our ordinary arsenal for the relief of phthisical patients. In the latest edition, also, of the admirable work of R. Douglas Powell,⁶ will be found remarks of considerable value with respect to the indications for the employment of this drug. In this author's observation, he has been led strongly to doubt whether creasote can be given during the hectic stage in sufficient quantities to influence pyrexia without running a grave risk of setting up gastro-intestinal irritation and destroying appetite. He regards it as being of more value in apyrexial conditions; he adds, however, that "when there is much local disturbance of stomach and upper bowel, small doses of creasote in combination with opium are sometimes of great service."

I do not wish further to weary attention with mere bibliographical research and refer to all the observations which have been made in regard to the creasote treatment of pulmonary phthisis; suffice it to say, that it has been largely praised; that several late observers, notably Fräntzel, Sommerbrodt, and Guttman, are inclined to regard it as directly curative of pulmonary phthisis, at least in its initial, or first, stage; that others, on the contrary, are less favorably disposed toward it, and frankly confess that they have been disappointed in it; and have discovered no reliable evidence to show that creasote has any marked beneficial action over and beyond what may be obtained from several other anti-bacillary agents.

¹ Deutsche med. Wochenschrift, No. 14, 1887.

² Berliner klin. Wochenschrift, No. 15, 1887.

³ Zeitschrift f. klin. Med., Berlin, 1887, xiii. 488-494; and Boston Medical and Surgical Journal, August 18, 1887, p. 161.

⁴ Deutsche med. Wochenschrift, Leipzig, 1887, xiii. 829.

⁵ Leçons de Clinique Thérapeutique, t. 2. Paris, 1885, 4th edition, p. 549, et seq.

⁶ Diseases of the Lungs and Pleuræ, etc. William Wood & Co., New York, 3d edition, 1886, p. 307.

Naturally, the discovery of the bacillus tuberculosis by Koch, in 1882, made those observers who gave it internally, or who made use of it in inhalations, or, in some rare instances, by hypodermatic or intrapulmonary injections,¹ since that date, endeavor to establish its utility mainly upon its antiseptic properties and upon its power "to retard the local development of tuberculosis," which is probable, if the experiments on animals of Coze and Simon, in 1883, can be relied on.² Hippolyte Martin,³ also, found that creasote failed to destroy the bacillus of tuberculosis, even in the proportion of 1 per 1000. This fact is said by him to be equally true of salicylic acid (solution of 5 per cent.); bromine (1 per 10,000 and 1 per 1000); phenic acid (1:1000); quinine and corrosive sublimate (1:1000). In experiments⁴ undertaken by C. T. Williams in 1883, with respect to agents which check the development of bacilli most, it was found that quinine had manifest action in preventing their development. These properties and this power are not spoken of, and were not probably thought of, as they now are, by Bouchard and Gimbert. They are of the opinion, however, that creasote acts locally on the pulmonary lesion and produces marked effects which are also beneficial. Essentially, they believe that creasote has the effect of promoting the growth of fibrous tissue around an area of consolidated, or broken-down lung structure. Thus it is, with the passage of time, that the cheesy infiltrations in the lungs become absorbed little by little, as the softened masses (or the contents of large cavities) are expectorated and the surrounding walls close in upon a relative vacuum where previously necrosed tissue in a solid or liquid form was largely present.

As will be seen by my own observations in a few cases later on, I am inclined to share this view and believe in its exactness.⁵ In regard to it, Jaccoud writes as follows: "Creasote seems also to have some effect upon the fundamental lesions themselves, and to promote the sclerotic change by means of which recovery is found to occur in this disease." (Loc. cit., p. 156.) Indeed, Jaccoud has remarked frequently, after the bronchitis had disappeared and stethoscopic signs of a pulmonary lesion

¹ See Wien. med. Presse, 1888, xxix. 87; Medical News, June 23, 1888, p. 696; AMERICAN JOURNAL OF THE MEDICAL SCIENCES, February, 1888, p. 179; New Medications, by Beaumetz, p. 192; Lyon Médical, 1885.

² According to Schill and Fischer, who mixed tubercular sputa with many different substances and afterward inoculated them in different animals, creasote does not appear to have any inhibitory action on the tubercular virus. (v. Mittheilungen aus dem K. Gesundheitsamte, 1884.)

³ On transformation of true or infectious tubercle into an inert foreign body under the influence of high temperatures and various reagents. Arch. de Phys., 1881, p. 93; Revue de Méd., 1882, t. ii. p. 905, 1883, t. iii. p. 209,—quoted by Beaumetz in New Medications, translated by E. P. Hurd, M.D.—foot-note on p. 182.

⁴ Proceedings of Royal Society, No. 231, 1884, quoted in work on pulmonary consumption, 2d ed., Philadelphia, 1887.

⁵ This view would appear to be that, also, of Spencer, who, in speaking of the antiseptic treatment of phthisis, concludes that in our treatment it is our aim to promote healing of the damaged lung tissue by means of fibroid substitution. (British Medical Journal, January 28, 1888.)

were reduced to a minimum, that two or three months later there was an evident and secondary diminution in the extent of the affected area, and *bronchial breathing* and *bronchophony* on the periphery of this area. These signs accompanying an evident improvement in the general condition seemed to indicate evidently a sclerosis around the area of pulmonary softening.

As regards the anti-bacillary effects of creasote when taken internally, or by inhalation, or both combined, I have nothing new or very positive to offer. On two occasions, in my own experience, when ordinary care had been taken by a good examiner, bacilli which previously had been present in considerable numbers, subsequent to treatment had notably decreased, or completely disappeared. In other cases the examinations made did not permit me to form a reliable judgment in this regard. As to whether creasote interferes with the bacilli locally, or through the circulation in virtue of its antiseptic properties, or whether, in addition to its promotion of sclerosis, it merely favors general nutrition whilst acting happily upon secondary, though important, symptoms, I am not prepared absolutely to affirm. I would add, however, that I am inclined at present to accept the latter, rather than the former belief. This conviction is based mainly upon what seems to me to be a fair and proper interpretation of numerous facts observed by myself and others already referred to. It is important to note, however, that I am now decidedly of the opinion that patients, as a rule, improve more rapidly and surely upon the conjoined treatment by means of antiseptic inhalations and creasote given internally, than they do upon either treatment by itself. I have attained this conviction by carefully watching the effects produced when one or other of these methods was abandoned for a time, and afterward when both were resumed and systematically used. It is probable, therefore, that in many cases the frequent, or prolonged, topical application of creasote vapors to the respiratory tract in a considerable area is of undoubted utility and, after a manner, not *very* different from what I have previously described.

Another fact of great practical importance relates to the purity of the drug and the source from which it is obtained. For the information of those whose attention has not been directed closely to this matter, I would state that in New York City (and I presume elsewhere) much of the creasote which is dispensed is simply crude carbolic acid, obtained from the distillation of coal-tar oil, and commonly called "commercial creasote." It has neither the color, the odor, nor the chemical properties of *wood* creasote, or, what is preferable, of the creasote which is obtained from the distillation of beechwood-tar. I am glad to believe that the ordinary dispenser, in making this pernicious substitution, is himself a victim of ignorance and not of knavery—at least so far as what pertains to the therapeutic use of the drug. And yet in moderate,

or large, doses, and particularly with sensitive patients, there is a very great difference in the effects of the two drugs. The one, viz., carbolic acid, may prove distinctly injurious, if not poisonous; whereas the other, viz., wood creasote, when judiciously employed, should be followed by favorable, or perhaps negative results, but rarely, if ever, by manifest bad consequences. I am credibly informed that the only creasote in the market to-day which responds favorably to all, or most, tests of absolute purity is that of T. Morson & Son, an English product, which is mentioned on page 497 of the *United States Dispensatory*, and that of Merek, a German product. Of the two products, Morson's is the one which I prescribe and believe is purest. In order to avoid uncertainty, or risk in prescribing, it is essential at present to designate definitely the creasote that we wish to employ and afterward see to it that our prescription is taken to a trustworthy pharmacist.

Through inattention to the foregoing necessary precautions, in two instances reported to me, somewhat poisonous effects were produced by the internal use of carbolic acid, when it was intended that creasote should be taken.

In my judgment, whenever creasote is prescribed, it should be taken, at least at the commencement of treatment, in small or moderate doses. These doses should be continued a long while, or only gradually increased.¹ If an attempt be made, especially at first, to take large doses of creasote, in the majority of cases stomachal intolerance will soon follow and we shall be obliged either to diminish the amount prescribed, or lessen the frequency of doses, or abandon the treatment altogether for a time. My experience is different from the *personal* experience of a Russian physician, Dr. Bogdanovitch, who found no appreciable benefit from small doses (half a grain four or five times a day), but who, when "he began to take creasote in gradually increasing large doses, beginning with four grains a day, and reaching in about two months a daily dose of forty-four grains, there took place fairly rapidly an unmistakable and permanent improvement in his symptoms."² It is, also, different from the reported observations of Sommerbrodt and Guttman, from the perusal of which Bogdanovitch took his inspiration.

The daily amount of creasote prescribed by me for adults, in private practice, has varied usually from three to six minims, and continued frequently many months without increase, or interruption, or any evidence of intolerance. The ordinary dose of half a minim is repeated every two or three hours. It is given with whiskey and glycerine, according to the following formula,³ which is that of Jaccoud, the sole

¹ This opinion is corroborated by that of Spencer (*British Medical Journal*, January 28, 1888), who says that the influence of the antiseptic should be continuous and prolonged.

² *British Medical Journal*, March 10, 1888

³ Whenever the mixture is taken according to this formula no addition of water is required, and it reminds one, by its smoky odor and flavor, of slightly sweetened Scotch whiskey.

difference being that I use whiskey where Jaccoud employs cognac or rum :

R.—Creasoti (beechwood) ℥vj.
 Glycerine ʒj.
 Spts. frumenti ʒij.—M.
 S.—As directed.

In hospital practice, for convenience' sake, or rather so as to give the patient a sufficient supply of medicine to last until his next visit to the hospital, I prescribe teaspoonful doses, each teaspoonful containing one minim of creasote, and to it are added two teaspoonfuls of water. This addition is made to prevent irritation of the throat in swallowing the dose. It also obviates irritation of the stomach in some instances. The dose is ordered every three hours, so that if it is taken with absolute regularity the patient gets eight minims of creasote in twenty-four hours. This is rarely the case, as, owing to sleep or other cause, one or two doses are usually omitted.

The formula which I have used in prescribing creasote is a very good one, as in it the creasote is perfectly dissolved and *sufficiently diluted*, thus preventing it from being unpalatable or irritating. The perfect *solution* of creasote and *its large dilution* are both strongly insisted upon by Bouchard and Gimbert in their original article as being essential points in rendering it acceptable to patients. In Jaccoud's formula, as slightly modified by me, we obtain the well-known beneficial effects of whiskey and glycerine in the treatment of phthisis. I regard it, therefore, as superior to the following, which is the one adopted by Fräntzel:¹

R.—Creasote ℥xv.
 Tinct. gentian. ℥xj.
 Spts. vini rect. ʒvj.
 Vini xeres q. s. ut fiant ʒiv.
 S.—ʒss ter die ex aquâ.

It is well to add that only pure whiskey and glycerine should be employed, and as the latter is frequently adulterated, and hence injurious, I would indicate Price's or Bowers's glycerine as being probably the best.

I have also frequently prescribed creasote in gelatine capsules combined with cod-liver oil. These capsules are now made by several manufacturers abroad, and may be readily manufactured in the United States.² Each capsule contains about a minim of creasote. They should be taken fifteen or twenty minutes after meals. At other times they are apt to cause dyspeptic symptoms. Two or three at a dose mark the limit of stomach toleration ordinarily, and in only one or two instances have I

¹ The Year-book of Treatment for 1887.

² Already one pharmacist in New York, to my knowledge, makes them.

been able to increase this number without occasioning digestive disturbance. For these reasons the capsules do not appear to me, at present, as eligible a form to prescribe creasote as the mixture of creasote with whiskey and glycerine.

If creasote be administered in cod-liver oil, the amount of oil must be at least one drachm to the minim of creasote, in order to obtain a proper dilution of this drug. Otherwise, if cod-liver oil be indicated for a patient, it is desirable to give it separately, and order the creasote to be taken in the manner first advised. This I have done in several instances, and particularly when, despite the use of creasote, with complete stomachal tolerance, there has been continued loss of flesh.

In a very large proportion of cases of pulmonary phthisis that I have treated during the last year or two (and in every one of the cases hereinafter analyzed), whilst creasote was taken internally, antiseptic inhalations were also used by means of the perforated zinc inhaler. As a rule, in the beginning, the inhaler was worn during fifteen or twenty minutes every three hours, and from ten to twenty drops of the inhaling fluid were poured on the sponge of the inhaler at least three times in twenty-four hours. The inhaling fluids most frequently employed by me were :

1. A combination of iodoform, creasote, eucalyptus, chloroform, alcohol, and ether, seemingly a somewhat formidable mixture in view of its numerous constituents, but a very rational one when explained in detail.

2. Iodine, creasote, carbolic acid, and alcohol.

3. Creasote and alcohol.

The first one of these inhalants is a modification of one taken by me from Lauder Brunton; the second is that of Dr. Coghill,¹ and, according to R. Douglas Powell,² "is a favorite and much used one;" the third is, so far as I know, my own combination. The following are the precise formulæ:

R.—Iodoformi	gr. xxiv.
Creasoti	℥iv.
Ol. eucalypti	℥viij.
Chloroformi	℥xlviij. ³
Alcoholis ætheris	āā q. s. ℥ss.—M.

R.—Tinct. iodi ætherealis,	
Acidi carbolici	āā ℥ij.
Creasoti	℥j.
Sp. vini rect.	ad. ℥j.—M.

R.—Creasoti	℥j.
Alcoholis	ad. ℥ss.—M.

¹ Antiseptic Inhalations in Pulmonary Affections. By J. St. Clair Coghill, M D Brit. Med. Journ., 1881, vol. i. p. 841

² Loc. cit., p. 308.

³ The chloroform in this formula was originally added by me on account of its value as a preventive of cough. I am glad to find that, according to Salkowski (Deutsche med. Wochen-schrift, April 19, 1883), it is also most available, from its volatility, amongst the ethylic chlorine compounds, as a respiratory antiseptic.

I desire now to direct attention to the tabulated statement of the results obtained by me from the creasote treatment of pulmonary phthisis.

The total number of cases which have taken creasote mixture and used creasote inhalations (simple or compound), to which I have reference, are: At the New York Hospital, out-patient department, 142; in private practice, 19. Besides, I have an interesting letter from my late house-physician, at St. Luke's Hospital, Dr. Charles H. Collins, who, at my request, looked carefully over the records of that institution and found that during the last two years about 150 cases of phthisis pulmonalis have there been put on the creasote treatment, and a large percentage of these cases he has been able to watch. The points of interest observed by Dr. Collins, and the reflections made by him in his letter to me I will reproduce, after giving an analysis of my own observations—recorded by myself with some care.

Of the total number of 143 cases seen at the New York Hospital, there were 51 cases of pulmonary phthisis at the first stage of the disease; 18 cases at the second stage, 18 cases at the third stage; there were also 4 cases of laryngeal phthisis, 1 case of fibroid phthisis, and 1 case of acute phthisis. The total number of cases, therefore, in which the diagnosis is mentioned of the stage and nature of the disease, is 93—leaving 50 cases of pulmonary phthisis in which the stage of the disease is *not* mentioned. Of the whole number of cases seen at the Out-door Department of the New York Hospital, 54 were females, 89 were males.

Of the 93 cases mentioned, there are 47 cases in which some notes were made as to the effect of treatment, of more or less value. Of these 47 cases, I have arranged in tabular form such data as seemed to me to be of any interest. I have also done a similar work in regard to my 19 private cases. From these tables I shall now proceed to take such facts as result from their study.

The duration of time during which these cases were treated varied from one week to two years eleven and a half months. Of these 66 cases, 45 were males and 21 females. 37 cases were affected with the first stage in a manifest manner, as shown by the physical signs and the rational symptoms; in 3 cases the physical evidences of disease were doubtful or negative, although the rational symptoms pointed plainly to beginning phthisis; in 6 cases there was found an evident second stage of phthisis; in 1 it was a question whether the case had advanced so far as the second stage; in 11 cases the disease had attained the third stage; in the remaining cases the diagnosis of the stage of disease is not recorded.

In cases of the first stage of the disease, 24 had their cough *improved*, sometimes very much, sometimes only a little; in 3 cases the cough did

not improve; in 10 cases the cough was *cured*. In several cases in which the cough was improved, the sleep was quieter, and previous insomnia evidently depended largely upon cough and expectoration; in a few instances, even though the cough improved, the sleeplessness did not improve, and evidently was independent of the cough. In those instances in which the cough is stated as being cured, I cannot say in all of them how long the cure lasted; in some, I know, the cough returned, but was again cured by the use of creasote in mixture and as an inhalation. In many cases at different stages (first, second, and third)—17 in all—no mention is made of the effect of creasote on the cough. In some of these instances it is possible that the question was *not* asked; in many of them it is probable that *no mention* is made, because the cough remained *stationary*. What I say here for the cough, I should be obliged to repeat for other symptoms, and I would, therefore, offer this as an explanation where my silence shall point to it, without my wearying you by similar repetition.

In 3 cases of phthisis at the second stage, cough improved either slightly or very much. In the other cases it remained stationary; in no case did it increase. In 6 cases of phthisis at the third stage, the cough improved notably in 4; in 1 the improvement was very great; in 1, instead of improving, it became worse.

As regards *night-sweats* at the first stage, 8 cases were cured; 4 improved; 3 remained stationary; in 1 case they increased; in 6 cases the patients never suffered from them; in 15 cases no mention is made of this symptom. At the second stage, 1 case was cured, 1 remained stationary. In a doubtful case of second stage, there was great improvement in one instance. In 4 cases no mention is made. At the third stage, 1 case was cured, 2 improved (1 greatly), 1 patient never had night-sweats, in 7 there was no mention of them.

With respect to *dyspnœa* at the first stage, 15 cases were improved; 4 cured, 1 case remained stationary, 1 case never had dyspnœa; there is no mention in regard to this symptom in the other cases. At the second stage, 1 case was cured, 2 cases improved, 1 case remained stationary; in 2 cases no mention is made. At the third stage, 5 cases improved; in 6 cases no mention is made.

The sputa at the first stage diminished in quantity, and improved notably in appearance in 18 cases; in 5 cases the sputa disappeared; in 3 cases there was no diminution in amount of sputa; in 1 case the sputa increased in quantity; in 2 cases, in which bacilli had been found in the sputa, later on they could not be found. In 3 cases the bacilli were looked for merely to verify the diagnosis, and they were not looked for later on to see if they had disappeared.

Three times the sputa did not change in appearance or quantity, but were raised more easily. The changes in appearance of the sputa were

often quite remarkable, and from green and yellow they became white and frothy; less tenacious, less thick. When the sputa diminished in quantity and were less viscid, cough decreased and sleep often improved. At the second stage, the sputa diminished notably in quantity in 3 cases; in 1 case, although they did not diminish much in quantity, they changed their appearance for the better and became less thick and tenacious. At the third stage, the sputa diminished much in quantity in 4 cases.

The *appetite* was improved in 17 cases at the first stage; it remained stationary in 3 cases; in no case did it notably diminish. It improved in 2 cases at the second stage; in 1 case it diminished. In 4 cases at the third stage, appetite increased. In 3 cases at the second stage, and in 7 at the third stage, there is no mention of the effect on appetite.

In 2 cases dyspepsia was occasioned by creasote; in one of these cases the mixture was continued, and the dyspepsia soon improved; in the other case capsules of cod-liver oil and creasote were given, and had to be abandoned altogether.

In 2 cases nausea and gastralgia were evidently caused by the creasote mixture, which was stopped for a while. In 3 cases the medicine caused constipation, in 1 case the constipation remained the same; in 3 cases the constipation was cured by creasote mixture.

In 2 cases diarrhœa was brought on; in 1 case there was considerable pain in the bowels; in 3 cases there was no effect on the bowels at all; in 2 cases the bowels became more regular; previously there had been alternate attacks of constipation and diarrhœa.

The effect on weight was very notable in many instances. In 18 cases at the first stage, there was increase of weight, the amount of increase ranging from one-half pound to twenty-five pounds. Two, three, and four pounds increase was quite common. One patient gained three pounds in six weeks' treatment. In 4 cases weight remained stationary. In 3 cases weight was lost, in 1 of these in moderate amount (about two and one-half pounds), due to an acute attack. Previous to this attack, weight had been stationary. In 2 cases there was a loss of five pounds; in 1 of them four pounds were subsequently regained by three weeks' use of malt and cod-liver oil. At the second stage, in 2 cases there was some loss of weight; in 1 the weight remained stationary; in 3 cases there was no mention of it. At the third stage, there was increase of weight in 2 cases, loss in 1, stationary in 1, no mention in 7.

In a large proportion of cases—46 in all—no mention is made of hæmoptysis. In 11 cases at the first stage, no hæmoptysis occurred during treatment; in 3 of these cases hæmoptysis had occurred previously, small or large in amount. In 4 cases a slight, or very moderate spitting of blood occurred, but in all these cases one or several hemorrhages from the lungs had taken place before the creasote treatment was begun. In 1 case at the second stage, hemorrhage occurred during

treatment; but in this case several hemorrhages took place before treatment was instituted. In 5 cases no mention is made of hemorrhage. In 4 cases at the third stage, no hemorrhage occurred either during, or before treatment with creasote. In 7 cases no mention is made of it. It seems probable, therefore, from the foregoing statements, that whilst creasote may not, except to a very limited extent, control pulmonary hemorrhage, it does not promote or occasion it, and may, therefore, be given with perfect safety to those patients who are liable to these recurrences, and, indeed, during the period they actually take place.

As regards elevation of temperature, no record was made in 41 cases. In the others, as well as could be determined, the following is probably a correct statement: In 7 cases fever was cured under creasote treatment, viz., it disappeared and did not return during the time the patient was under observation. In 9 cases fever was notably lessened. In 1 case of these 9, the fever returned for a time when the patient had an acute exacerbation of the disease, which occurred several times during many months, and did not always appear to be occasioned by imprudence, or cold, but was rather the natural outcome of the disease. In 8 cases, so far as could be observed, no perceptible effect was produced on the fever, and it remained about stationary. In *only* 1 case did the temperature rise whilst the patient was under treatment, and then only to a slight degree.

It is fair to assume that in creasote we have, in the treatment of phthisis, an antithermic agent of no mean value.

In 35 cases there was no mention of the effect of the treatment on the strength of the patients. In 26 cases there was manifest improvement in strength. In 6 of these the strength is spoken of as "returned," or "regained." In 3, as *greatly* improved; in 17, as notably improved. In 1 case strength remained stationary; in 4 cases *strength* diminished.

Pains in chest were cured 8 times; improved, 13; stationary, 2; none in one instance. In 42 cases no mention is made.

Pains in throat were cured in 6 cases, improved in 7, made worse in 3, remained stationary in 2. In 5 cases patient never suffered from pain in the throat; in 43 cases no mention is made. In 1 case of cure it was attributable to the inhalations. In 3 cases in which the pains in the throat improved, the previous hoarseness diminished, more or less, or disappeared entirely.

In the 3 cases in which the pains in the throat became worse, they were thus caused by the local irritating effects of the mixture. In one instance the voice became weaker and more hoarse.

The pulse is noted as being less frequent and stronger in 6 cases; in 2 as normal; in 2 as showing no apparent change and remaining frequent. In the other instances no mention is made.

Generally speaking, there was no change in the appearance, or amount

of urine passed. On only one occasion did it apparently increase considerably in quantity, owing to the use of creasote; on another it became clearer, where previously it had contained considerable deposits of urates; in a third instance the urine became more turbid. On many occasions it was tested for albumin; either none was found, or the amount previously existing in the urine remained the same. No casts were observed, in repeated examinations, which could be ascribed to the use of creasote, nor did any pronounced dark discoloration occur, such as may follow the internal use of *coal-tar* creasote. In no instance could I detect the odor of creasote in the urine, and in only one did ordinary tests reveal its presence. This was a case of acute phthisis in a young woman who was taking at the time sixteen minims of creasote daily and who was, also, making frequent use of creasote inhalations.

As regards physical signs, I have only 2 cases at the first stage, to report of complete disappearance of every evidence of morbid condition in the lungs. In two other instances, the signs improved so much that it required the strictest construction not to pronounce them cured. In 10 cases at first, second, and third stages, there was slight or decided improvement in the physical signs revealed by careful examinations of the chest.

This improvement consisted in fewer moist râles heard at the apices, in diminished area of dulness, in diminution of thoracic vibrations, of resonance of the voice, in softened, less prolonged expiratory murmur, which was also of lower pitch. Among the cases which I have observed, there have been, in my opinion, at least four apparent cures, if due consideration be given to the effects produced on both signs and symptoms of pulmonary phthisis.¹

Dr. Charles F. Collins's report, dated St. Luke's Hospital, May 30, 1888, reads as follows:

"In regard to the creasote treatment in phthisis pulmonalis in hospital cases, I have gone through all the records since the treatment was first begun. The notes in the cases, though accurate, are not complete enough to enable me to make satisfactory tables and to draw positive conclusions concerning special points. Then, also, the previous condition of most of the hospital cases is often very bad in respect to hygienic surroundings, often suffering from want of food and rest, so that after admission to the hospital when improvement takes place it is sometimes difficult to isolate the special value of treatment *per se*. Then, too, there are many cases admitted in the last stages and the condition often without hope, so that any results from treatment are not looked for; to keep the patient comfortable is the only attempt by way of treatment that is available. It is also in hospital cases almost impossible to avoid

¹ The cases will be found reported in full in the Transactions of the Association of American Physicians, for 1888, which will be published shortly.

treating specific symptoms, such as night-sweats, wakefulness, diarrhoea, etc.

"During the last two years about a hundred and fifty cases of phthisis have been put on the creasote treatment, and a large percentage of these I have been able to watch, and the following points may prove of value. It never has been discovered that the drug in any way caused gastric distress or intestinal symptoms. It is pleasant to take and, in the formula you introduced, patients often ask for it when leaving and take it for a length of time, and I have never known a patient to dislike the mixture.

"As to urinary and kidney symptoms I would add the following: There has never been any perceptible change in the quantity during the twenty-four hours, and repeated examinations chemically of the urine of patients on creasote have failed to reveal any changes; as far as I can judge, have not known it to cause albumin even though continued for months, and many cases suffering from renal complications when admitted to the hospital show no signs of an increase of their trouble in regard to urine when put on creasote treatment.

"In general, I would like to add that this mode of treatment, the inhalations as well as internal administrations, seems to give better results and be more available than any mode of treatment we have followed out. Many cases leaving the hospital have asked for the prescription, and in cases which I have been able to follow and which have conscientiously carried out treatment, as far as can be judged, there seemed to be a lasting benefit and continued improvement.

"It is a matter of considerable regret that I cannot give you records of a number of special cases, but on account of the conditions above mentioned, truthful records of hospital patients suffering from diseases of this character are always subject to many errors."

In this place, and before giving my conclusions to this paper, I will add a few words which I believe are important to bear in mind. We all know how readily one may be deceived by tabular statements, or, indeed, occasionally by reported cases. It is so easy to prove too much! Whilst error, however, often arises from the over-valuation of a particular drug, it is possible to under-estimate the utility of a real addition to our curative means in this line, when judged after a similar manner. Therefore it is that final remarks or reflections, more or less in the form of conclusions, must frequently be added, so that a correct opinion should be formed of what a writer really believes.

I am convinced, in view of what I have seen, the proofs of which I have stated, and notwithstanding their imperfect character in many particulars, that we have in beechwood creasote a remedy of great value in the treatment of pulmonary phthisis, particularly during the first stage. Not only does it lessen or cure cough, diminish, favorably change,

and occasionally stop sputa, relieve dyspnœa in very many instances; it also often increases appetite, promotes nutrition, and arrests night-sweats. It does *not* occasion hæmoptysis, and rarely causes disturbance of the stomach or bowels, except in cases in which it is given in *too large* doses.

There is a fair amount of evidence to show that by its long-continued judicious use, it may and will modify favorably the local changes in pulmonary phthisis, and how it does this I have pointed out previously, as far as I was able. Whether or not it has any direct anti-bacillary effect when given internally, or by inhalation, or both combined (the latter method being, in my judgment, the most efficient one), remains as yet to be determined in a more accurate manner. It is certainly an unobjectionable medicament from any point of view. It is easy of administration; it is adapted to the majority of sufferers from pulmonary phthisis everywhere; it may be used with some advantage at all stages of this disease, even the most advanced, and *in my experience* it has proven itself superior to any other medicinal treatment with which I am familiar.

That in all cases the nutrition is the cardinal factor to be always kept in view in the treatment of pulmonary phthisis, no matter what method or course be followed, is, I believe, as true to-day as it always has been from the clinician's standpoint, and without regard to the passing theories which may be adopted in regard to the precise *rôle* or influence of microbes in the pulmonary structures. The words of Dujardin-Beaumetz¹ seem, in this connection, of much value:

"There do not exist several medications of phthisis; there is but one, that which addresses itself to the nutrition; the others are only adjunct methods, which become dangerous if they succeed in affecting unfavorably a single day, a single instant, the digestive functions."

Or those other words of E. L. Trudeau:²

"It should be kept in view that so long as the tissues present a favorable nidus for the development of the bacilli, the destruction of a portion of them, if this should be found feasible, would not necessarily eradicate the disease."

To the end of altering those chemical and vital changes in the organism which allow of the growth of the microbe, "thus far those conditions which promote bodily vigor have alone been found effectual."

A CASE OF SCLERODACTYLE WITH DIFFUSE SCLERODERMA.

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OF TROY, N. Y.

As I can find no recorded American case of sclerodactyle, I report the following case, hoping it may contribute to a better understanding

¹ Leçons de Clinique Thérapeutique, t. 2, p. 647.

² Medical News, May 5, 1888, p. 490.

of the disease. But thirteen cases are recorded—one English, one German, three Scandinavian, and eight French.

August 16, 1888. Mrs. S. K., æt. forty-five years. Mother and father both died of phthisis; has a brother living, and in perfect health; another brother died several years ago of some cerebral difficulty, the nature of which I was unable to learn. Has three step-sisters living and in good health. The patient has had seven living children, one stillborn, and one miscarriage. Of her seven children, four are now living and in excellent health—none of them presenting the slightest trace of their mother's disease. Of the three children dead, one died from the results of a deep cellulitis of the neck at seventeen months; one died when seventeen days old, and one but a few days after birth. Of the seven births, four were breech cases. She suffered greatly during each confinement, and they were long and tedious.

Prior to the occurrence of her present illness, which first made its appearance in the winter of 1868, she had been in excellent health and had never seen a sick day since childhood. Her menstruation first made its appearance at the age of eighteen; she has always suffered considerable pain prior to the onset of the flow, and was usually ill for six or seven days, always losing too much blood. Her menstruation has continued with perfect regularity until two years ago, save in January of 1868, from which time she dates her present illness. Two years ago her menstruation appeared very irregularly, coming and going at intervals of from three weeks to as many months. Since January, 1888, until July 15, 1888, she had not menstruated. July 15th, was unwell, and continued so for seven days, losing a great deal of blood. At the date of this examination she is ill, losing more blood than ever before. She never has had hemorrhage from the nose, stomach, intestines, or bladder.

The disease first made its appearance in January, 1868. About the middle of January she went to a dance; while in a condition of profuse perspiration she sat exposed to a draught of air, and had a severe chill. She was menstruating at the time; this ceased. A doctor was called, and gave her a hypodermatic injection of morphia in the left thigh; in a few days was better and able to be about.

In the early part of April she first noticed, in walking, that her legs were getting stiff, at the same time pains, neuralgic in character, made their appearance in both legs, and ankles and knee-joints. The stiffness continued, and became very noticeable on going up or down stairs. Soon local feelings of cold appeared. This stiffness and pain became so severe that she sent for her doctor, who told her that she was suffering from rheumatism, and applied on the outer side of the right leg a large blister, the effects of which were very painful, and resulted in an ulcer, which did not heal for three months. She was, during that time, able to walk only with considerable difficulty. This impediment to locomotion was not due to the ulceration, but to the increasing stiffness and pain.

During the months of July, August, and September she was not able to walk and was moved about in her sick-chair; this she attributes to the too rapid healing of the ulceration. She began to walk a little in October. November 15th, gave birth to her first child; was unable to walk for eighteen months after her confinement. She then walked occasionally, but with great difficulty and pain. She has been able to

walk a little about her house until seven years ago ; since then has never walked.

Eighteen years ago the little finger and thumb of her right hand became swollen, very stiff, and cold ; this condition continued from bad to worse, and the thumb and little finger became the seat of very severe pain. Two years after, the stiffness, pain, and swelling made their appearance for the first time in the thumb and index finger of the left hand, soon followed by local feelings of cold ; very gradually the stiffness and swelling extended to the index and middle fingers of the right hand. The left little finger became affected next in order ; the middle and ring fingers were the last to become involved with this stiffness and pain. She does not know when the infiltration and thickening of the skin first began, nor does she remember about the thickening of the skin of the face and its swollen condition ; she states that her friends have frequently told her that her face was much bloated for several years.

In the winter of 1880, a large ulcer made its appearance on the dorsum of the right hand, occupying its entire surface, superficial and secreting a serous-like material, which did not heal for six weeks. The following winter an ulcer, having exactly similar characteristics, appeared on the dorsal surface of the left hand. This ulcer healed in three weeks. Neither ulcers left scars. There has never at any time during the existence of this disease been any ulcerations of the fingers, and no discharge of fragments of bone or bone dust has occurred. She complains bitterly of cold fingers, which are always made worse by the use of cold water. She dreads the winter very much ; she is always pleased with the approach of warm weather, which brings with it marked relief to her sufferings of cold and pain. During cold, rainy days in summer the cold sensations return, and are immediately attended with severe pain. She was able to sew quite well until six years ago ; since then, on account of her deformed fingers, can use a needle but very little. She can distinguish between very small objects, and, apparently, has no sensory disturbances. Plunging her hands in hot water gives considerable relief to the pains and cold sensations ; but if, by accident, her hands be plunged in cold water, she suffers severe pain and the cold sensations remain a long time. There have been no scales or horny epidermic growths on the hands.

Examination.—Patient is short, rather stout, and weighs about 170 pounds. She is bright and intelligent ; there is no mental disturbance, no affection of speech, no difficulty in swallowing ; has an excellent memory. The skin of the face, forehead, neck, arms, forearms, thighs, and legs is thickened ; that of the face is glossy, of a pinkish hue, and can be moved with great difficulty on the underlying tissues—this is especially marked with the skin covering the malar processes and that on the forehead. One cannot pinch the skin into folds. There are no wrinkles to be seen on the face or forehead, and that of the forehead does not wrinkle whether she laughs, speaks, opens her mouth, or tries to cough. The naso-labial folds are nearly effaced. The eyelids do not appear to be thickened and are not œdematous. The patient is able to open and close them in a normal manner ; there is no overflow of tears. The ears are large and prominent, and look as if made of wax ; they are universally thickened, which is especially noticeable in the lobes. Slight friction of the ears with a bit of cotton produces a pinkish hue. The skin covering the nose is very tense and glossy, particularly near its root ;

the *alæ nasi* are freely movable, and present no atrophic processes or ulcerations. The lips are cyanotic and thickened. The movements of the lower jaw are quite restricted by the thickening of the skin covering the rami and that of the chin and neck, preventing the patient from opening her mouth in a normal manner. The tongue is slightly coated, about its normal size, and can be protruded a little beyond the teeth. The gums are spongy and bleed readily when irritated. A number of teeth are missing, and those remaining are very friable. Her hair is becoming sparse, is brittle, and quite gray. Along the margins of the scalp and just over the eyebrows a scaly seborrhœa-like deposit is seen. This thickening and immovability of the skin, and the peculiar wax-like appearance of the face, with the absence of wrinkles and folds, give a remarkable expression. The countenance is changed and the face has a fixed immobile condition, as if covered by a mask.

The skin of the neck and chest is less thickened than that of the face, and more easily movable; it has a wax-like color and is glossy. Three large transverse folds are to be seen crossing the front of the neck. The lateral movements of the head are much restricted, while those of flexion and extension can be performed with ease. The patient is unable to raise her arms to a right angle with the body; can with difficulty touch her nose with her finger-tips, and cannot place her hands on her head. These restrictions are not due to any interference on the part of the normal action of the shoulder or elbow-joints, but to the hidebound condition of the skin covering the shoulders and arms, preventing the underlying muscles of these localities from performing their physiological functions. There is no ankylosis of the shoulder- or elbow-joints. The upper extremities remain in a condition of adduction, motions of supination and abduction cannot be performed. The skin covering the forearms is less thickened than that covering the arms and shoulders, and is a little movable; it cannot, however, be pinched into folds. It has a wax-like appearance. The wrist-joints are stiff, immovable, and ankylosed. There is a little lateral motion in the wrist-joint of the right hand. The skin on the front and back of the joint is indurated, tense, and thickened. The thickening of the skin about the wrist does not prevent one from finding the pulse, which is a little rapid, but of good strength—a number of counts give an average of eighty-five beats per minute. Perspiration has nearly ceased; a little perspiration takes place about the neck and forehead during very warm weather.

There is universal tenderness on deep pressure over all the body save the abdomen. This deserves special mention, as the tenderness is not confined to those parts most diseased, but to those presenting the least sclerodermatous changes. The patient dreads to be pinched or to have too firm pressure applied on the surface. The hands look as if made of wax, and are quite puffy. On the dorsal surface of the left hand near the outer side of the wrist, a small white cicatrix is seen. The skin covering the hands is more movable and less thickened than that of any part of the body save that of the abdomen and feet; is puffy and wax-like. This puffiness is very marked on the dorsal aspect; the skin and underlying tissues in this situation are atrophic. The skin covering the metacarpo-phalangeal and phalangeal articulations is tense, thickened, stiff, and glossy, and not as movable as that of the dorsum. There is an entire absence of hairs on the hands, and they are sparse on the forearms.

The ulcerations which the patient described as having occurred on the dorsal surfaces of the hands in the winter of 1880-1881, doubtless were large pemphigoid bullæ, as there can be found no trace of a cicatrix on either hand. As the deformities, distortions, and dislocations of the fingers of the right hand are a little in advance of those of the left, it will be first described. The skin on the dorsal surface of the hand is much less thickened than that of the forearm; has a wax-like color, is smooth, puffy, and swollen. The wrist-joint permits of slight lateral movements, but extension and flexion are prevented. A small conoidal tubercle is seen on the outer side of the hand near the wrist.

The points of most interest are the peculiar deformities, the apparent dislocations, and the atrophic changes of the phalanges. The thumb is fore-shortened, the terminal phalanx small, atrophic, and congested; the skin on the outer surface of the articulation with the second phalanx is thickened and atrophic, so that the terminal phalanx is flexed on the second, almost at a right angle. Movements of extension and flexion can be easily executed at this joint, while lateral movements are restricted. There is no ankylosis at the metacarpo-phalangeal joint, and movements of the joint are unimpaired. The skin of the index finger appears very puffy, particularly that covering the first phalanx; this, with the atrophic condition of the second and third phalanges, gives the fingers a marked spindle shape, which is fore-shortened: the motions of the metacarpo-phalangeal joint are free; movements of flexion and extension of the first phalanx are limited, but lateral movements are unimpaired. The third phalanx presents its normal length and thickness; the second is about half its natural length and thickness; the ungual phalanx is very small, its tip red; the articular surfaces between it and the second phalanx have undergone extensive atrophic changes, the phalanx is freely movable, slightly flexed in a lateral position, and dislocated laterally. The middle and ring fingers are of equal length *and not much shortened*; the skin covering the first phalanx of each is puffy, giving them the spindle form. They are freely movable at all the phalangeal articulations, the ungual phalanges of both fingers present the same redness as those of other fingers: the second phalanges are shortened, and the terminal ones over-extended. The little finger is very short, puffy, and flexed at an acute angle, the skin is thickened on its outer side, the articulations are freely movable, and there is no stiffness. The ungual phalanx is about one-third its natural size. The nails of the fingers and thumb are small, brittle, and striated. The fingers look like wax, except their tips, which are red and congested.

Left hand. The thumb presents the same deformity as that of the right, but in a less degree. The thumb, as a whole, is flexed at a right angle at the metacarpo-phalangeal joint; its first phalanx is over-extended and laterally flexed. The index finger is more deformed than its fellow. The motions of the metacarpo-phalangeal joint are free; there appears to be a dislocation of the second phalanx to the outer side at its articulation with the first; the second and third phalanges are more extended and laterally flexed toward the middle finger. The middle and ring fingers have the same appearance as those of the opposite side. They are of equal length, are freely movable in all directions. The little finger is much deformed, is fore-shortened: the second and third phalanges are small and atrophic: the terminal phalanges of fingers and thumb are like their fellows—red and con-

gested, and the nails are small and brittle. (Figs. 1 and 2 are from photographs of the palmar and dorsal surfaces of the left hand, showing the deformed fingers and position of hand.)

FIG. 1.

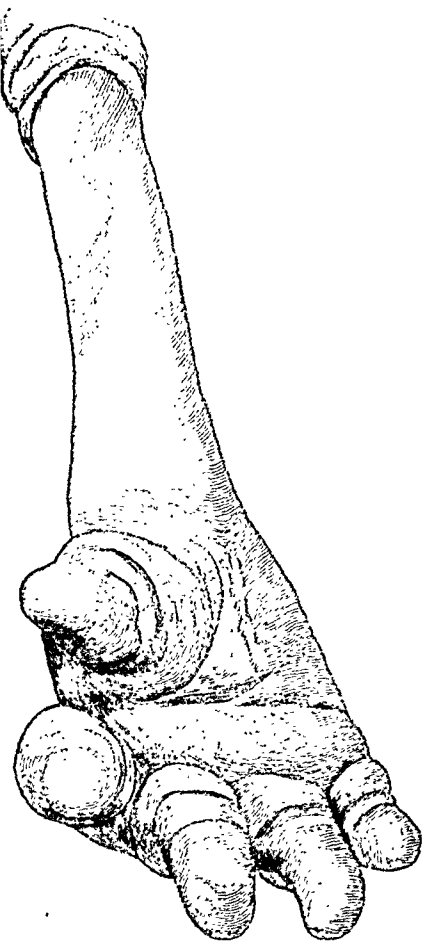
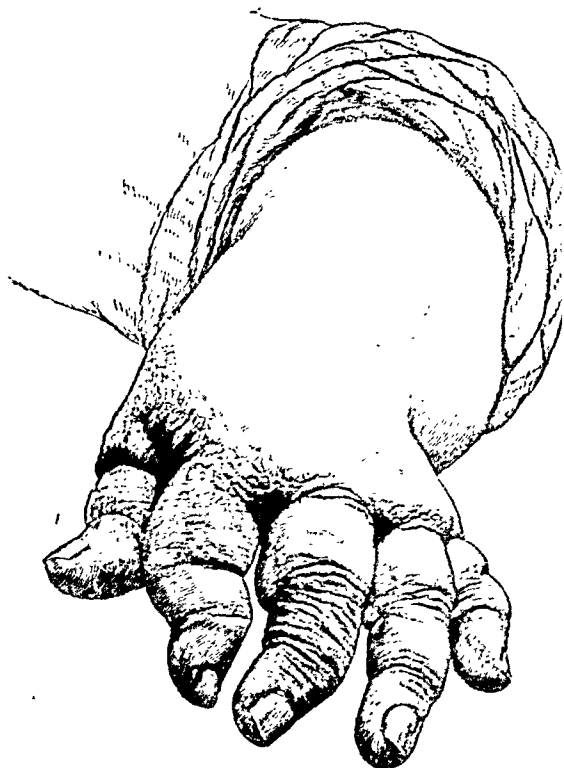


FIG. 2.



Looking at the hands placed close together, that which is most striking is their extreme smallness, due to the atrophic changes in the bones and joints. They appear symmetrical in the distribution of deformities and the conditions of articulations and general character of the skin. On close inspection, one sees that the disease is more advanced in the right hand, and that it presents, with few exceptions, the greatest deformities. The skin of the palms is not thickened; is of a pinkish hue, analogous to that of the ends of the fingers. The hands are habitually held in a sort of claw-shape; the fingers are flexed in a peculiar manner. The normal grooves of the palms are much exaggerated.

The skin of the feet is not thickened, and is freely movable; there are no deformities of the toes; deep pressure on the skin produces intense pain. They are constantly cold. The skin covering the upper parts of the legs is much thickened. Very limited motion at the knee,

but a little flexion and extension remaining. Skin of chest a little thickened; that of abdomen appears normal and is freely movable. Heart and lungs normal; passes normal amount of urine, acid reaction, specific gravity 1010, no albumin, no casts. No affection of cranial nerves: muscular, thermal, tactile, and pain senses normal. Bladder and rectum normal. The tendon reflexes cannot be elicited on account of the ankylosed condition of the joints and thickened and hidebound condition of the skin.

Electrical reactions. Chloride of silver combined battery; faradic current; indifferent pole on nape of neck, other over motor point for facial nerve, in front of ear. No response with cylinder fully in: when withdrawn one inch, left facial nerve muscles respond with quick contraction; right facial nerve muscles respond equally well when cylinder is out one and one-half inches. Extensor muscles of forearms respond sluggishly when the tube is withdrawn two inches. Muscles of ball of thumb and the interossei give quick contractions.

Galvanic current. Left facial nerve, seventeen cells, K. C. C.: response being prompt of all muscles supplied by the facial. Right facial nerve, twenty-five cells, K. C. C.: response more sluggish than that of opposite side. Reversal of poles, with same number of cells, produced no reaction; but when thirty cells were introduced, left facial nerve muscles A. C. C.

Extensor muscles of forearms, with thirty cells, respond quickly to negative closing: positive closing, a slight contraction. There is no reaction of degeneration; a decided quantitative diminution in extensor muscles of forearms and those supplied by right facial nerve. Muscles of the legs respond in a normal manner.

As to etiology, very little is known. A very noticeable feature of the disease is the fact of its having developed, without an exception, in women. Distinct neurotic family histories were traceable in the cases of Hallopeau,¹ Ball,² Dufour,³ Rapin,⁴ and my own. In no case could a history of *syphilis* be elicited. Heredity could be traced in no case. Several of the patients had had children, but they never presented traces of the disease.

That which seems to play the most important part in the production of the disease is the action of cold. The starting-point of the disease in three patients was attributable to the sudden checking of perspiration, after exposure to draughts of air. In all cases the patients complained bitterly of cold; very much dreaded the approach of cold, rainy weather. When the disease had apparently been stationary during the warm summer months, it made rapid progress in winter. In six patients the disease first made its appearance in winter. All the patients were much worse during the cold season. Dufour's patient was treated by Rilliet with cold baths, which, instead of improving her condition, made her decidedly worse. Several patients have had recourse to hot baths,

¹ Société de Biologie, December, 1872.

² Société de Biologie, June, 1871.

³ Société de Biologie, October, 1877.

⁴ Journal Bulletin de la Société Médicale, 1875, page 383.

and especially of plunging their hands in hot water, with decided relief to all the symptoms.

The onset of the disease was characterized, in most cases, after exposure to the influence of cold, to repeated acute attacks in the hands and feet. The fingers and toes become the seat of intense lancinating pain, localized especially over the small joints; subjective sensations of numbness, tingling, burning, and formications, followed by circulatory changes; the toes becoming violet, very cold, and finally assuming a waxy appearance. This condition would last about half an hour, when gradually they would recover their normal sensibility and temperature.

After several of these attacks of pain, tingling, formication, local feelings of cold, and alterations in the circulation, in four cases, small bullæ made their appearance, especially over the phalangeal articulations and near the roots of nails, which, after a short duration, ruptured, leaving small superficial ulcers, which were very difficult to heal and often secreted pus freely; when healed, the skin covering them was often hard, indurated, sometimes pigmented, adherent, in most instances, to the underlying tissues, and often the seat of yellowish crusts. In three cases ulcerations occurred on the elbow-, wrist-, and ankle-joints, and, after healing, their places were occupied by yellowish, horny excrescences resembling species of epidermic corns.

The lesions of the hands are of most interest; they are symmetrically distributed in most cases. In most cases the deformities were more marked in the right hand. That which is most striking is their apparent smallness, which, in most part, is due to the atrophy and fore-shortening of the fingers. The skin of the dorsal surface, in most cases, is of a waxy color, with a yellowish cast, resembling old wax, is thickened, cannot be pinched into folds, and is usually adherent to the underlying tissues. In a few cases marked pigmentation was noticed. In three cases there was an absence of hairs on the dorsal surface of the hands and fingers, and a scarcity on forearms. Ankylosis at the wrist-joint occurred in three patients. In a number of cases yellowish crusts were discovered near the wrists, and at times over the phalangeal articulations. The skin of the palmar surface has been found normal in regard to thickening and movability, but it was most generally of a pink color, rather swollen and puffy, and having the palmar groves markedly accentuated.

The fingers are the parts most compromised. They present several deformities. Some are dislocated at their phalangeal articulations, being in positions of flexures; others freely movable. The phalanges were, in all cases, atrophied, both in length and thickness, producing marked fore-shortening. The skin covering the fingers, in most cases, has been described as waxy, thickened, in some cases adherent to underlying structures, usually quite puffy, particularly over the first phalanx, which, with the atrophic condition of the second and third, and

the smallness of the nails, give the fingers a spindle form. The distal phalanx of the thumb, in three cases, was atrophied, flexed almost at a right angle with the second, and partially ankylosed in that position; the index, middle, and ring fingers have their terminal phalanges flexed, producing a sort of claw-hand; the little finger, in most cases, was markedly deformed, much shortened, its phalanges atrophied to an extreme degree, and the terminal one at a right angle with the second. The nails, in all cases, have been deformed; they are very small, sometimes a third their natural length, variously curved and hooked; friable, rough, and deeply striated in their long diameter.

In six cases the feet were the seat of pain, numbness, formication, local changes in the circulation, producing a violet, and later a waxy color. In three cases ulcerations and the formation of horny excrescences and yellowish crusts appeared similar to those in the hands; in all cases the patients complained bitterly of cold feet. In no case have the feet and toes become deformed to anything like the extent which occurs in the hands. In the cases of Dr. Radcliffe Crocker¹ the skin covering the dorsal surface of the feet was hard and indurated, but the toes were not affected in their movements. In Dufour's patient, after an acute attack in the toes such as described, they remained semiflexed, and could not be straightened. In three cases ankylosis at the ankle was observed. There is no sclerodermatous change in the feet or toes of the patient under my observation; the skin is freely movable, and not the least thickened, and no deformities of the toes exist. But a few weeks ago she suffered an attack of severe pain in the great toes, followed by vascular changes. During this attack the terminal phalanges of the great toes have both been dislocated inward and distinctly flexed, and at present no scleroderma exists. The perspiration in a few cases has been absent, and in all cases much diminished. The temperature is not recorded in other cases; in my case it has always been 99° F.

Six cases presented diffuse sclerodermatous changes in the skin covering the face, neck, upper part of the chest, upper extremities, and thighs. In the cases of Lienville² and Huchard³ the neck and thighs escaped, and in Arnozan's sclerodermatous changes appeared on the back.⁴ The condition of the face is quite remarkable: no wrinkles can be seen, and emotional changes do not bring them out, thus giving to the patient a rather stupid appearance; face looks waxy and swollen, the skin is glossy, thick, and indurated, and but little movable. In a few cases the patients, because of this condition of the skin, were unable to open their eyelids in a normal manner, and the thickening and hidebound condition of the skin covering the lower jaw prevented the mouth from being

¹ *Lancet*, July, 1885, page 192.

² *L'Union Médicale*, No. 93, page 372.

³ *Société de Biologie*, 1874.

⁴ *Journal Médical*, Bordeaux, 1881, page 97.

opened naturally. In four cases the changes in the skin were confined entirely to the hands and fingers, and in the case of Haslund¹ they were confined to the skin covering the second and third phalanges.

It is difficult to form an opinion from the observations of but one case as to the nature or primary origin of the disease. The number of autopsies and clinical observations are too few to determine with certainty the nature of the disease. There has been but one autopsy. The case of Hallopeau, after a duration of eleven years, died of phlegmonous erysipelas. An autopsy was made by Budin and Lagrange, which I copy from Senator's paper.² Several autopsies have been made in cases of diffuse scleroderma. In Schimmers's case disease of the peripheral nerves was found.³ Westphal found pathological changes in the brain, and in a recent case of Eulenberg progressive facial atrophy coexisted with scleroderma. The mode of inception by intense pain, numbness, tingling, burning, and formication, with circulatory change, probably dependent on vasomotor changes, followed by the formation of blebs and ulcerations, very stubborn and difficult to heal, and the repetition of the attacks before the deformities make their appearance, and their symmetrical distribution, the nutritional disturbances in the small joints, the dislocations, the atrophic changes, marked local changes in the temperature, can best be explained by a *trophic* affection of the nervous system.

In two cases the changes in the bones and joints were explained by the pressure of the sclerodermatous skin. But after a careful study of the reported cases I am inclined to think that the trophic changes in the bones and joints precede those of the skin. As to the condition of the case here reported, I can state positively that there is no sclerodermatous change in the skin covering the feet or toes, and that after a very severe attack of pain, followed by coldness and circulatory changes in the great toes, they both became dislocated and flexed inward.

Autopsy. Budin and Lagrange. In certain phalanges the cortical substance had disappeared, so that the cancellous tissue appeared to be in direct contact with the periosteum, in others the atrophy was less marked. Microscopical examinations in other bones, in which the process was of an older date, showed scanty, irregular infiltration of embryonic cells; about the vessels and in spots, aggregation of fat cells occurred, these again were more numerous in the long diseased and more atrophic bones than in those later attacked; the bony substance showed quite an irregular framework, with large meshwork, which contained fat and embryonic cells, the latter especially heaped up in the borders of the framework or about the vessels, and more sparsely in the bones with marked atrophy, more numerous in the neigh-

¹ Medical Society, Copenhagen, March, 1886.

² Berliner klinische Wochenschrift, August, 1888.

³ Scleroderma, Ziemssen's Handbook of Skin Diseases.

borhood of the joints. In the more recently diseased and less atrophied bones, the joints showed the same changes as are found in chronic arthritis: loss of cartilage, a disappearance of bone through fibrous, and in other parts connective tissue. In the spinal cord and nerve-trunks of the arms nothing abnormal was found. In the little finger of the left hand there was found in two or three places in the nerve-sheath an infiltration of embryonic cells.

Lagrange and Budin agree in regarding the changes as dependent upon an irregularly advancing chronic inflammation, which extends from the skin to the underlying tissues.

ON SOME FORMS OF PARALYSIS AFTER TYPHOID FEVER.¹

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IN a short communication relating chiefly to some of the surgical sequels of typhoid fever, Sir James Paget says:

"I do not feel competent to deal with the question whether each fever has, as seems probable, its own proper sequels, and in this sense, though perhaps in less degree, as specific as in its fever-period, but I have not yet seen either periostitis or local paralysis of muscles after any other than typhoid fever, or a fever which I suppose to be closely related to it, and I have not seen after typhoid any corresponding number of cases of large lymph-glands, diseased joint, or other diseases of mere debility, such as may follow any acute illness."

And he quotes the remark of Dr. Baly, to the effect that "a book on the diseases of convalescence might be one of the most valuable that any physician could write." A consideration of the truth of this remark has led me to lay before the Association a few notes upon the important subject of paralysis following typhoid fever.

It is an interesting question how far these so-called sequels or well-defined disorders occurring during the convalescence from fevers and other acute diseases are special or confined to certain of them only, and how far others may occur in a similar relation to several of them. Certainly, in many instances, the latter is found to be the case, as, *e. g.*, *otitis media* after both *scarlatina* and *measles*; whilst, again, some peculiar local derangements seem to follow in the wake of a particular fever, and to bear no similar relations to any other, *e. g.*, paralysis of the palate following diphtheria. So with periostitis after typhoid, which may occur in many situations. I have seen it several times on the tibia, once leading to severe necrosis, often on the ribs, and twice on the surface of the

¹ Read before the Association of American Physicians, Washington, 1888.

sternum. So with the affections of the nervous system, the most common form being of the muscles supplied by the peroneal or anterior tibial nerve, whilst more extensive paralyses are decidedly uncommon. The very peculiarities of the parts affected, and the frequency with which they are attacked in preference to all others, show certainly a predilection for them which must give the stamp of specificity.

It is not to be wondered at that the nervous system suffers in many ways after the prolonged disturbance to which it is subjected during a siege of typhoid fever. Indeed, it would be remarkable if derangements of the nervous functions were not often witnessed under these circumstances. In a certain proportion of all cases of this fever, the incidence of the poison seems to be upon the nervous system, as is evidenced by the occurrence of cephalalgia, insomnia, delirium, tremors, and debility. As a sequel of these profound and prolonged disturbances in the nervous system all patients who have thus suffered are left in a condition of very marked asthenia, and it is a long time before they are in a condition to bear any, even moderate, amount of either bodily or mental fatigue. These signs of exhaustion of the nervous system are constant, and generally in proportion to the severity of the fever, and the degree to which its violence has fallen upon that portion of the mechanism. But, apart from such general functional diminution, there are, in exceptional cases, signs that certain isolated, and often strictly localized, portions of the nervous system have suffered out of all proportion to the rest, and in them the impairment of function may reach a high degree. Thus, the cerebral cortex may be the part chiefly affected, and we observe, even after full convalescence has set in, that the mental functions remain imperfect and hallucinations and delusions may persist for a very considerable time—or, as concerns us most at present, some part of the spinal cord, or some one or more of the spinal nerves, exhibits altered function.

It is, however, a fact that, although these sequential paralyses are more frequently observed after somewhat severe attacks of typhoid, yet they do not specially occur when the fever has been marked by an excess of nervous disturbance. Nor can any such predisposing cause as the influence of country or of a neurotic temperament be shown to play any part. The nervous phenomena, almost invariably, are both motor and sensory, presenting paralysis with either pain or anæsthesia. This has always been observed in *spinal* nerves, and has not been seen in any of the mixed (motor and sensory) central nerves. According to Nothnagel (*Deutsch. Archiv für klin. Med.*, 1872), from an examination of recorded cases, the following is the order of frequency of these affections: 1. The parts supplied by one nerve or branch of a nerve, with special predilection for the ulnar and the peroneal. 2. Paraplegia, generally confined to the lower extremities, but not very infrequently involving an upper extremity—sometimes both arms and legs—sometimes one side

more than the other. 3. Less frequently, one extremity, either upper or lower, or two extremities in crossed order. 4. Simple alterations of sensibility; if looked for, these will be found *very frequently*, though not so striking as the cases with combined paralysis and anæsthesia. They are observed chiefly in the lower extremities and especially in the feet.

From a consideration of many cases of paralysis after this fever, it may be inferred that the mode in which it is produced is by no means always the same; that, indeed, the effect of the poison is exerted sometimes upon some of the great nervous centres, especially of the spinal cord, and at other times upon the structures of some special and individual nerve or nerves. Jaccoud, *e. g.*, speaks of paraplegia being due to *œdematous infiltration* of the parts in the vertebral canal, and is of opinion that even prolonged *exhaustion* of these centres without organic lesion may be the cause of a motor loss enduring even for a considerable time. Prof. Biernier relates an important case, in which he finds difficulty in deciding between acute poliomyelitis anterior and multiple degenerative neuritis, there having been pain, motor paralysis, good sensation, diminished electrical reaction, atrophy, and bedsores, a tedious illness of several months, and, finally, complete recovery. As the tendency in all these cases is toward recovery their pathology is necessarily scanty and founded upon what is better known about recognized lesions whose symptomatology is somewhat analogous.

The commonest variety of post-typhoid paralysis is that which is confined to the district supplied by one nerve, *e. g.*, the ulnar, peroneal, or the circumflex. Here, it is extremely probable that two distinct pathological conditions may exist. There may be a true interstitial neuritis or there may be an acute parenchymatous change in the nerve elements. The two varieties are separated from each other mainly by the presence or absence of *pain*—this symptom being a marked feature in the former, owing to the pressure exerted upon nerve-filaments, and being absent in the latter where this condition does not exist; the main feature, however, the loss of power in the supplied muscles, being equally present in them both. It has been suggested by a recent writer (Thomson) that a similar acute parenchymatous degeneration is to be looked upon as explaining that common post-febrile paralysis, the diphtheritic, and the view has much to commend it.

It is not unusual after typhoid fever of considerable severity to find a definitely enfeebled condition of the lower extremities persisting for some time, and sometimes a person never entirely recovers his capacity for walking long distances. Such paretic cases have never been specially studied, but it is probable they would, if any should, fall under the head of defective innervation from prolonged exhaustion of the nervous centres.

The most important, however, of cases of post-typhoid paralysis are

those of paraplegia, confined sometimes to the lower extremities and sometimes involving these together with some other parts. Well-marked cases of this kind are sufficiently unusual, and one may see several hundreds of cases of typhoid fever without meeting with a single example. Not much has been written upon it, and in some articles very dissimilar conditions are probably included under the same description.

The following case is a striking instance of a very severe form of paraplegia directly resulting from typhoid fever and still ending in complete recovery.

Julia L. was brought by the ambulance to the Montreal General Hospital on the 8th November, 1887. The following account of her illness was obtained from her attending physician. She complained on the 1st September of headache, feverishness, pains in the limbs, and a short hacking cough. After one week took to her bed. Was first seen by her physician on 12th September. At this time she had a severe cough with whitish expectoration. Moderate distention of abdomen, and gurgling in right iliac fossa. Temperature 102° F. The disorder ran the ordinary course of a moderately severe attack of typhoid fever without complication. Patient remained in bed until October 25th, when she got up, went about the house for three or four days and was apparently convalescent; appetite good, sleeping well, and gaining strength rapidly. On October 29th temperature rose to 102° F. and she began to suffer from severe pains in the legs. The lower extremities were very sensitive, the patient not being able to bear any motion of the bedclothes. The legs were flexed on the thighs and the thighs on the pelvis, any attempt at extension being very painful. At this time had incontinence of urine for one day. The skin over the left trochanter and sacrum very soon became red, and in two or three days a large slough, about two inches square, had formed in both these situations. The skin over the right trochanter also became reddened but did not slough. The temperature soon became normal and remained so.

On admission, much emaciated and anæmic; face pale, eyes brilliant, pupils dilated and equal; expression anxious and haggard; skin dry and harsh, cool; tongue clean and moist; abdomen retracted, not tender on pressure. Lies on right side with legs and thighs flexed. Some œdema of left foot. Numerous small purpuric spots on both legs from knees downward. Great wasting of muscles of both lower limbs, thigh and leg; both knees are rigidly bent; any movement to relieve the contraction is extremely painful. Marked paresis in all attempted movements of foot, leg, or thigh. She is unable to hold up either leg from the bed without support. Much tenderness on pressure upon the muscles of the legs or thighs. No anæsthesia. The skin over the two malleoli somewhat reddened. Plantar and abdominal reflexes present. There is a large bed sore over the lower part of the sacrum, about two inches square, covered with a hard, black slough and with inflamed edges. There is a similar slough on the left trochanter, and the skin over the right trochanter is reddened but unbroken. Pulse feeble and rapid, but regular. Temperature normal. In lungs, many moist sounds heard at both bases, chiefly in the left. Urine contained a small amount of albumin. Complains of pain over the bedsores and weakness. Eats well. Sleeps

soundly. Urine and feces passed naturally. Is very feeble and resents being moved or stirred.

She was put upon a water bed and the bedsores poulticed, and was given quinine, good diet, and a small allowance of stimulants. The slough soon separated and the sores were dressed with balsam of Peru and iodoform; they slowly granulated and finally healed. The contraction of the knees obstinately remained. In February, the legs were gradually extended by means of weights and pulleys until they became quite straight. During this time, motor power was slowly returning and pain quite disappeared. After a time, she could stand upright, and perform the flexion and extension movements of the feet and the legs. Improvement was then rapid, and she was discharged March 1, 1888, able to walk nicely about the ward. She has since remained well and strong.

During apparent convalescence, there occurred severe pain in the limbs, marked tenderness of skin and muscles, no anæsthesia, diminution of superficial reflexes, loss of electrical contractility, extensive bedsores, loss of power to a great extent but never complete, contractures, no disturbance of sphincters. The case looked very unpromising and it was only the known tendency of these cases toward recovery and the probability that the lesion was really in the nerve-trunks, and not in the spinal cord itself that enabled a somewhat favorable opinion to be entertained.

The second illustrative case is still more remarkable inasmuch as it presents an example of unusually extensive paralysis after typhoid—the nervous disorder involving all the limbs and, in addition, the palatal muscles after the manner of diphtheritic palsy.

Ernest H., æt. fifteen years, was admitted under my colleague, Dr. Wilkins, into the Montreal General Hospital on the 26th of March, 1888, suffering from typhoid fever of a few days' standing. The case presented no unusual features, and was of a rather mild type. On the twenty-fourth day of illness the temperature was 99° , and in a few days later it reached and continued at the normal figure. About this time he found that he spoke with some difficulty—that is to say, the effort required for speech was greater than it should be; it was noticed that his speech had a nasal intonation. There soon followed a sense of numbness in the ends of the fingers and in all the limbs; the weakness being greater upon the left side than the right. By the 4th of May he lay in bed without power to raise either leg from the bed, the head and arms were raised with great difficulty, and the grasp was very feeble. There were no pains in the extremities. The voice was quite nasal, speech was difficult, and swallowing required an effort and occasionally produced regurgitation. The velum palati was relaxed and insensitive. Knee-jerk absent in both legs. Tactile sense good. Muscles of lower extremities react normally to the faradic current, but somewhat slowly to the galvanic current. Muscles of the upper extremities react three times as strongly on the left side as on the right side. Eyes examined by Dr. J. J. Gardner: "Pupils react to accommodation and light, but somewhat lazily to light. Accommodation unimpaired. External ocular

muscles act well, no weakness of internal recti. Fundus normal." He remained in this condition of extensive paresis, under treatment by means of galvanism and strychnia for several weeks, being removed by his friends on the 27th of June, 1888. At this time the limbs had improved in power to a moderate extent, and the nutrition was better; the voice was less nasal.

Gowers (*Diseases of the Nervous System*, vol. ii.) alludes to similar cases, but mentions that, as diphtheria is known sometimes to accompany typhoid fever, so a paralysis in reality of diphtheritic nature may be observed as a sequence of such a compound attack; and the question may be raised whether H. did not have diphtheria. There is no proof that he did have throat affection of any kind; and, on the other side, he was, during the whole time, under skilled attendants in a hospital, and nothing was ever noticed or complained of which led to an examination of the fauces. It may, therefore, I think, be safely held that no diphtheria complicated the case. I would also recall, as strongly corroborative of the same view, that there was no disturbance of accommodation, and no albumin in the urine.

Although actual observations are not very numerous showing presence of the lesions of peripheral neuritis, and the absence of change in the spinal centres in cases in which post-typhoid paralysis has existed, yet they are sufficient to substantiate the occurrence of such a disorder. Indeed, in the light of the somewhat remarkable observations recorded by Pitres and Vaillard (*Revue de Médecine*, t. v., 1885), we may well be surprised that the clinical evidences of neuritis are not more frequently met with. These writers made careful and extensive histological examinations of peripheral nerves in various parts of the body in cases of typhoid fever which had proved fatal from various causes, but in none of whom there had, at any time, been evidences of nervous lesion or disorder. The result was, in every case, to find microscopical evidence of well-marked changes in the structure of most of the nervous trunks and their branches, whilst the actual nerve-roots and the spinal centres remained unaltered. And the question is raised, "How frequently in reality does such neuritis occur?" In the examples recorded there had been nothing from a clinical standpoint to suggest its existence, and they were selected quite by chance. Does it occur both in fatal cases and in those mild or more severe cases which end in recovery? We are led to think the latter possibly true, owing to the frequency with which more or less marked evidences of sensory, motor, or trophic disturbances are met with as sequences of typhoid fever.

Is this neuritis set up by the elevation of temperature? or by the general derangement of nutrition? Or may the typhoid poison act directly upon the nervous fibres, irritate these, and ruin their structural integrity—determine, in fact, a parenchymatous neuritis? This neuritis, it is stated,

attacks not only the superficial branches which innervate the skin, but also the larger and deeper trunks. May it not, therefore, be that the disturbances in them are to blame for many of the symptoms generally observed in typhoid fever: cutaneous hyperæsthesia, muscular hyperæsthesia, wandering or localized pains in the limbs, etc., symptoms which are often attributed, perhaps rather gratuitously, to irritation of the meninges, or of the spinal cord? The truth would seem to be that when a neuritis of this kind is mild in character and affects a few only of the fibres of any particular nerve, no appreciable symptoms are produced thereby, or, at any rate, such slight phenomena as it may induce are lost in the complex symptomatology of the pyrexia; and that, for some obscure reason, these nervous lesions sometimes become exaggerated, extend to still other bunches of fibres, and then give rise to the well-marked symptoms due to a diffuse or a localized neuritis: sensory, motor, and trophic disorders, confined to the region supplied by one or several nerves, according to the distribution of the determining lesions.

As regards the *etiology* of this affection, some authors have regarded it as due to the anæmia which must necessarily result from a long febrile illness. That such is not the case is proved by the actual condition of many of the patients who have shown no such degree of blood-impoverishment as would be at all sufficient to account for serious disorder of the nervous centres or their branches. The series of cases produced by Nothnagel were selected from the barracks, and were all young, vigorous, and full-blooded men. The effects of any such anæmia would surely be more general, involving loss of energy in movements, but not a true paralysis. It could not possibly produce the clearly defined paralysis affecting special nerves as we find after typhoid fever. The other hypothesis which has been suggested is that the disorder consists essentially in a degeneration of the affected muscles. That this cannot be, is sufficiently obvious from the extensive sections of the body which may be simultaneously involved as—*e. g.*, both lower extremities, or these together with an upper extremity; from the constant presence of pain at some period, and often severe; and from the existence of anæsthesia.

Post-typhoid paraplegia generally sets in gradually and disappears gradually, but, in rarer examples, it comes on suddenly and passes off either suddenly or, at any rate, very quickly. Such a case is that reported by Ollivier, which led him to infer the existence of a true, but temporary, congestion of the spinal cord. There is nothing impossible about the hypothesis, and it seems necessary in order to explain such a case, but certainly does not apply to the more common forms of gradual development. Nothnagel suggests that actual spinal hemorrhage is more probably here present, and that meningeal hemorrhage has, in reality, been often found in fatal cases of typhoid fever.

The predilection for certain special groups of muscles observed in the paralyzes of plumbism and of diphtheria does not exist in the same degree after typhoid fever. In it there is no rule, and, to explain it, we must look for some cause capable of making its influence felt in an infinite variety of situations: the ulnar or the peroneal nerve, a plexus of nerves, both lower extremities, an upper, together with the opposite lower, extremity. At the same time, all degrees of intensity may be observed, from the slightest paresis up to complete abolition of function.

The paralysis generally develops slowly and gradually, and it commonly advances to a considerable degree before being arrested. Arrived at this stage, it may be expected to recede spontaneously or under the influence of treatment, and the case to end in complete restoration of function. A more unusual course is that in which, as before, a slight, or very moderate degree of weakness is gradually developed, and then suddenly a great change occurs, and a perhaps complete paralysis sets in. Even here, the usual result is gradual return of power. In either case, there are exceptional instances in which the paralysis will be permanent, even in spite of early and efficient treatment.

The first symptom is generally pain, and this may precede any motor defect by some considerable time. Pretty often, the pain and the commencement of the paralysis are noticed about the same time.

The cutaneous sensibility is nearly always diminished, and these sensory disturbances—*i. e.*, pain and anaesthesia—are amongst the most constant phenomena of this affection. In severe and well-marked cases trophic changes are seen, consisting chiefly in a greater or less degree of atrophy. There is diminution of electrical contractility, both to the galvanic and to the interrupted current.

From a consideration of these general features Nothnagel strongly argues that the condition is essentially the same as one of traumatic paralysis when the injury has been done by some gradually compressing cause. We must, in that case, look for some pathological cause which is capable of acting in this way. Certain it is that, in fatal cases of diphtheritic paralysis (which has many affinities with that under consideration) there has been found evidence of thickening of the anterior and posterior roots of the involved nerves, especially in the neighborhood of their point of junction; and also of diphtheritic infiltration within the nerve-sheaths. It is probable that there would be found, in an early stage, proliferation of the connective tissue, and that the subsequent contraction which always sets in under these circumstances would keep up the compression of the nerve-filaments. The same hypothesis would apply to examples of extensive—or even quite limited—areas of anaesthesia.

WHAT CASES OF INSANITY SHALL WE TREAT AT HOME?

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A FEAR of the non-asylum treatment of insanity widely obtains in the profession, not so much because of the invariably superior advantages of the asylum as because of lack of familiarity with mental disease and the general idea that most cases of insanity are dangerous either to themselves or to those about them. This fear has prevented recognition of the fact that asylums have their disadvantages just as undoubtedly as they have their advantages, and has seemingly retarded proper appreciation of the significance of the almost universal abolition of restraint in asylums within the last few years. To send a patient to one of these institutions is to cast a suspicion of mental integrity upon the whole future career of that individual, whilst cases even of a much severer type of insanity than that for which the patient may have been committed will, when treated at home, be regarded lightly by the laity under some such vague name as brain fever, delirium, inflammation of the brain, etc., and will soon be forgotten in business and social circles. My experience of the practice of medicine has convinced me beyond a peradventure that for many curable insanities no hospital can take the place of a home in which a wife, a mother, a sister, or friends will watch a patient and a patient's nurse with the keen eyes of affection. Again, the physician is under infinitely more stimulus to be on the alert in a home wherein he attends one individual, under the observation of an interested family, than when he has a hundred or more patients under his care in hospital wards. On the other hand, violence, especially if it be long continued, is best controlled in the specially equipped wards of an asylum, as are also suicidal, homicidal, and uncleanly lunatics; moreover, some active conditions of lunacy are best left without medicine, and allowed to roam harmlessly about within certain limits, and it may be impossible to permit this play of the so-called *vis medicatrix naturæ* in a private house; many chronic cases, too, needing only housing and supervision, will have much more freedom and comfort in asylum wards and grounds; and, finally, lack of pecuniary means may make it absolutely impossible to keep the patient at home. In other words, there is no reason why the question of the home or asylum treatment of a case of insanity should not be determined by the same considerations as determine the home or hospital treatment of an ordinary case of sickness. Why should we not treat a case of insanity at home when it is possible to do it, and as long as it does not become absolutely necessary, either from the nature of the case or the patient's circumstances or environment, to send it to

a hospital? The object of this paper is to attempt to delimit cases proper for home treatment from those fit only for treatment in asylums.

The three mental conditions forming the basis of all classifications of insanity, are mania, melancholia, and dementia. An excellent idea of these three conditions can be obtained if a diagram be imagined in which a line is drawn to represent the ordinary condition of mental health, which, we all know, has decided variations within perfectly normal limits, from high spirits on the one hand to mental depression upon the other. A mania may be represented as an increase of the cerebral reflexes upward above the boundaries of this normal line, whilst melancholia may be represented as a decrease of the cerebral reflexes below this normal line; and we may, in this diagrammatic way, represent dementia as a cessation of even the limited cerebral reflexes within the normal limits. All these three main types—mania, melancholia, dementia—may be practically indistinguishable in their slighter degrees from normal mental conditions, although, as a matter of fact, even the slightest forms are apt to think or act or speak in some abnormal way which is so totally at variance with the patient's character as to indicate to a medical observer that the cellular action of the brain is deranged. The classification of insanities is based upon the intensity, duration, and sequence of these three cardinal symptoms—mania, melancholia, dementia—as well as upon their association with certain physical symptoms. In other words, the insanities are of two kinds, one in which the symptoms are purely mental, the other in which they are both mental and physical. We can obtain a better idea of the reason for this difference when we review for a moment our present knowledge of the cortex of the brain.

No one nowadays would be rash enough to deny that the cortex is the organ of the mind in so far as the structural integrity of the former is absolutely necessary for the healthy manifestations of the latter. The old, old doctrine of cortical localization, vaguely outlined by the early Arabians and in the Middle Ages carried into the ridiculous phrenological absurdities of Gall and Spurzheim, and given its first anatomical basis by Bouillaud, Marc Dax, and Broca, has made very considerable progress within the last eighteen years, so that at the present time we can localize accurately a number of so-called *centres*, as of the upper and lower extremities, head, neck, face, motor mechanism of speech, mental mechanism of hearing, sight.¹ Professional interest in this question of localization is so great at the present moment that every month adds definitely to our knowledge, and it is extremely probable that we stand on the threshold of an almost indefinite multiplication of these so-called

¹ Further details in this branch of the subject will be found in my article on "Our Present Knowledge of Localization in the Cortex Cerebri" N. Y. Med. Journ., June 18, 1887.

centres. But these centres are only terminal stations of certain nerve fibres in the cortical gray matter, and a disease of one of these termini leads only to impairment in the conducting power of these nerve fibres, and is not necessarily productive of any mental symptoms. Thus, a patient may be mentally intact, and yet have destruction of an arm centre sufficient to cause paralysis of the corresponding arm; or another patient, unable to recognize the meaning of spoken words, may be otherwise unimpaired in mind, and so it may be with a patient who has lost the ability to pronounce words, or who has become blind in symmetrical halves of each retina. Over and above any affection of these centres there may be a total mental alteration, but we do not know what portion of the cortex we are to regard as the site of pure mental alteration. There has been, to be sure, a strong tendency to regard the anterior portions of the frontal lobe as the site of mind pure and simple, but it is probable that mind will be found to be composed of a great variety of centres. However this may be, it suffices our present purpose to understand clearly that certain diseases of the cortex may be purely mental in their symptoms, that certain others may be entirely physical, whilst others still may present both mental and physical phenomena. With the purely physical this paper does not deal. Of the others, it may be said that the combination of physical and mental symptoms is always of evil augury, whilst the prognosis of the purely mental types is variable.

Cases favorable for home treatment may be catalogued as follows:

Subacute mania ;

Melancholia that is non-hallucinatory and without great agitation, præcordial fear, or stupor ;¹

Many cases of primary dementia ;

Many cases of post-febrile and so-called puerperal insanities ;

Insanity of doubt ;

Most cases of epileptic insanity ;

Some cases of hysterical and periodical insanity, as well as of the so-called circular varieties ;

Certain insanities of pubescence ;

The insanities of childhood.

When mania of a mild type occurs in a robust individual who is not of an advanced age, either without delusions or hallucinations, or having these only in slight degree, it may readily be treated at home. But care

¹ Hallucinations are unreal perceptions of the different senses ; thus, seeing something that does not exist would be an hallucination of sight, hearing something non-existent would be an auditory hallucination, and so on with the different senses of smell, taste, touch, pain, the muscular sense, temperature, and the visceral sensations. Illusions are metamorphoses of real into something unreal ; thus, the person looking at an inkstand and supposing it to be a horse, would have an *illusion of sight*, and so on. A delusion is practically a false belief, although the delusions of the insane usually differ from the false beliefs of the sane in being fixed and uninfluenced by argument or fact. Hallucinations and illusions may be delusive or non-delusive, and delusions may be based on hallucinations or illusions, or accompanied by them, or be without them entirely.

must be exercised not to mistake the mild symptoms of onset of a graver form of insanity for one of continued subacuteness of type. A week or two of time will make this point clear, although the degree of the initial depression and alteration in the patient's character and demeanor will very generally be reliable guides. Most of these cases of mild mania recover within the year, the average course being about five months.

The mild cases of melancholia are also extremely suitable ones for home treatment, when they have either no hallucinations or delusions, or faint ones, when they are not of the agitated or violent variety (the so-called *melancholia agitata*), and when they are without stupor coming on early in the course of the disease, and without attacks of distressing but vague præcordial sensations, to which has been given the name of *præcordial fear*. These mild forms of melancholia are relatively very numerous, and constitute the most frequent form of insanity. The great danger with them is the suicidal tendency, which seems to be the result of the mental suffering of the patient, and which may manifest itself without warning, even in the mildest cases, although the agitated cases, and especially those with præcordial fear, are always the most dangerous ones.

There is a form of acute dementia occurring in young individuals that is of good prognosis, and differs, therefore, very materially in this respect from the dementia which is the consequence of organic brain disease, or which is the terminal and hopeless stage of the unfavorable forms of insanity.

The post-febrile and puerperal insanities constitute a mixed type that is characterized by the acuteness of the symptoms, often by the high temperature and pulse, by the logicity of the delusions, by the sharpness of the hallucinations and illusions, and by the integrity of the consciousness and the memory. These cases are usually of good prognosis.

There is a form of insanity known as the "insanity of doubt" (*folie de doute, rhyso-phobia*), in which the patient does the same thing over and over again, because of doubt as to whether it has been previously done. Thus, a patient having gone through a doorway and shut the door, will return to it again and again to see if it has been shut; or, having washed the hands once, will wash them again and again, because of grave doubt as to whether they are really clean. This form of insanity is one which can be readily treated at home, except in the unusual cases in which it is conjoined with well-marked melancholia or mania.

It is well known that there are certain insanities beginning suddenly in hysterical individuals; there are certain periodical forms of insanity, recurring, as the name implies, with a certain periodicity; there is a form of insanity designated as circular insanity, or *folie a double forme*,

in which an attack of melancholia occurs, is followed by mania, then a lucid interval, and again the melancholia, succeeded by the mania, the intervals varying from months to years—in all these cases the insanity is of a type of mania or melancholia, and if this mania or melancholia is not of the severe type, the cases may be treated at home, although the prognosis will necessarily be very different from that of a simple mania or melancholia.

If an epileptic insanity be not characterized by homicidal tendencies, or such violence as makes the patient dangerous to himself or those about him, it may be treated at home.

There are many slight forms of insanity at the period of pubescence, especially in girls, that ought never, in my opinion, to be sent to an asylum until home treatment has failed, because they are rather the result, so to speak, of physiological excess than of actual pathological alteration. They are characterized by certain morbid beliefs, illusions, and hallucinations that are semi-delusional, and out of which the patient can often be reasoned; by a certain occasional eccentricity of action which is automatic, and at which the patient himself or herself often wonders; and sometimes by a certain confusion of ideas that may last for several weeks. The milder forms of this disease stand just beyond the border-line of mental health, and will often make the impression of affectation or eccentricity, but the severer types may become quite stupid, and continue for months. All the cases that I have seen have recovered.

There is quite a modern literature on what is called the insanity of childhood—*i. e.*, the insanities appearing in both sexes before the period of sexual development. Although the time limit is somewhat arbitrary, the distinction is valuable in a clinical sense. These insanities are of better prognosis than in the adult, whatever the type may be, excepting insanity of direct inheritance, and they may, therefore, be treated at home, as a rule.

The forms of insanity which should be sent to an asylum are:

All chronic insanities;

All forms of insanity characterized by homicidal, suicidal, or violent outbreaks;

Transitory mania;

Paranoia;

The form of insanity known as “katatonia;” melancholia with stupidity, great agitation, or distinctly marked præcordial fear;

General paralysis of the insane;

All forms of dementia constituting the terminal stage of insanities, or that are caused by organic brain disease, or that are senile;

The insanity of masturbation.

In speaking of the chronic insanities, it must be remembered that the terms chronic and acute have a different meaning as related to in-

sanity from what they possess in the nomenclature of general medicine, because even the favorable forms of insanity continue for six months or a year, and are known as subacute cases, whereas the chronic cases may be said to be those that do not show signs of improvement within the year. For the chronic cases an asylum has very many advantages in the continuous discipline and supervision, in the freedom of the grounds, in the many appliances of diversion and occupation, and in the ability to dispense with meddlesome medicine.

All forms of insanity characterized by homicidal, suicidal, and violent outbreaks are best handled in an asylum. The type alone will, in some instances, be indicative of danger in these respects. Thus, as has been said, all cases of melancholia, even the mildest, will have an organic suicidal tendency, although this is much the most marked in the severer forms; and insanity accompanied by delusions leading the patient to fear danger to himself, as when there is delusion of persecution, of being followed, etc., is apt to be dangerous. In other cases, the type alone will not be a safe criterion, and reliance will have to be placed upon the tendencies of the particular case, as the same form of insanity may vary in this regard from patient to patient.

Transitory mania is that form of insanity in which a furious outbreak suddenly occurs, as in the case of the Italian soldier who ran amuck in his barracks and murdered several of his comrades before he could be put under arrest; or as in the case of an individual in Buda-Pesth, told of by Schwartzer, who suddenly attempted to murder his intimate friend and was overpowered with great difficulty. The paroxysms generally last several hours, when a sound sleep occurs, and the patient wakes in his normal mental condition and totally without remembrance of what he has done. These cases are extremely dangerous, because the attacks are apt to occur so suddenly that no warning is given to the patient or those about him, and it is almost impossible to foretell as to how many future attacks there may be. When such cases have done any violence in one of their furious outbreaks, they ought to be locked up in an asylum either for the rest of their life or until such time has elapsed as to render it approximately certain that there is no danger of a recurrence of the paroxysms. Under no circumstances should they be kept at home before it is perfectly safe to do so.

Paranoia is an old term recently revived designating a very chronic form of insanity with logical delusions occurring in the hereditarily predisposed or the neurotic. Its synonym, "reasoning mania," expresses its character better. To this form belong that large class of patients to whom the term "crank" has been applied since the Guiteau trial. These cases should be sent to an asylum.

Katatonía is a disease that was first described in 1874, by Kahlbaum, and is a form of stupid depression associated with cataleptic symptoms.

The patient will sit for hours motionless, mute, and maintain a limb for a long time in any position in which it may be placed. Although opinions differ somewhat as to the prognosis, yet the course of the disease is prolonged and the patients need as much care as an infant, and these facts should be considered in deciding the question of home or asylum treatment.

In melancholia with stupidity the course of the disease is very apt to be chronic, unless the stupidity is of the very slight form that marks the stage of convalescence. If, however, it daily grow deeper and deeper, and be marked by automatic outbreaks of mental and physical activity that may sometimes be violent, it is usually of ill omen. When a case of melancholia has that vague sense of distress in the præcordia to which has been given the technical name of *præcordial fear*, there is always danger of some violent outbreak at the time of the præcordial phenomena, and this can be guarded against better in an asylum than at home; moreover, these cases are of doubtful prognosis. Melancholia with continuous agitation (*melancholia agitata*) is also apt to be chronic and dangerous.

Any of the graver forms of insanity may pass into a condition of dementia, but such a dementia should be sharply distinguished from the depression of spirits and mental exhaustion which mark the stage of convalescence of a curable insanity. The terminal form of dementia is a very unfavorable symptom. The dementia that is caused by organic brain disease has, of course, the prognosis of the causative malady. Senile dementia is necessarily hopeless.

General paralysis of the insane is, as is well known, a chronic interstitial encephalitis, of remittent character, usually running its course in about three years. It is characterized by certain slight though distinct symptoms in the earlier stages, such as tremor of the tongue and facial muscles, unequal pupils, difficulty of speech, especially in the pronunciation of certain lingual and dental sounds, alterations in the mental character, usually of some grandiose or expansive delusion, exacerbations lasting for a day or two, and during which the patient's face becomes flushed, his gait becomes uncertain, his speech becomes thicker, and he is very apt to do some purposeless act so totally at variance with his previous character as to dumbfound those about him; thus one of my patients, whilst in one of these paroxysms, was handed a flower by his newly wedded wife, and immediately struck her in the face. It is in this early stage, which is dotted with these slight and remittent symptoms, that a mistake in the diagnosis is most apt to be made. Such cases are absolutely incurable, and it is of enormous importance to recognize them promptly, not only because of the uselessness of treatment, but also because early recognition of the disease often prevents

much misery and loss of money or business, by the commitment of the patient to an asylum and the appointment of a trustee of his estate.

By the insanity of masturbation I mean what Dr. Spitzka happily terms an "agitated dementia," occurring in habitual masturbators, and usually of bad prognosis. It is, however, to be distinguished from the ordinary types of insanity, which may occur in masturbators, but which run about the same course as in anybody else.

The weight of the body and the predisposition of the patient are prognostic factors of considerable moment. It is a well-established fact that the loss of bodily weight in the curable insanities is not extreme, and that it continues to decrease with the development of the mental disease, and should, in favorable cases, only return to the normal in the period of convalescence; so that a full return of the bodily weight, without corresponding restoration of the mental integrity, would be a very unfavorable symptom. Then, too, it is a curious fact that a mild predisposition and second attacks are not unfavorable factors. Thus, in 33,318 cases collected by Dr. Pliny Earle, the percentage of recoveries in the first attack was 29.15 per cent., and in 93,443 cases of Chapman's it was 37.95 per cent.; whereas, Earle collected 4768 cases of second attack, in which the recoveries were 55.57 per cent., and Chapman collated 19,574 similar cases, in which the recoveries were 53.61 per cent.¹

As most insanities, especially the curable forms, are self-limited diseases, each type varying in its course from a few weeks to a few years, treatment is largely expectant, and its objects should be:

- To protect the patient and those around him;
- To control the unnecessary expenditure of energy;
- To control fever, if there be any;
- To relieve insomnia;
- To maintain the general health.

One of the first necessities of the treatment of a mental disease is that the patient and those around him should be protected from the irresponsible acts that may be induced by the mental disease. To this end it is absolutely necessary that there should be somebody in charge of him constantly, that dangerous instruments should be withdrawn from his reach, and a constant guard should be maintained in cases of *melancholia* against the suicidal tendency. In the mild forms of mania, in primary dementia, in the insanities of pubescence that have been described, and in many insanities of childhood, the danger of suicide or violence is very small, and these patients need have no alteration made in the furniture or their rooms, nor do they need any fixtures to the windows. Whilst there are many cases of mild *melancholia* in which

¹ The Curability of Insanity. By Pliny Earle. Philadelphia, 1867.

no suicidal impulse is developed, it should never be forgotten that this form of insanity is extremely treacherous in this respect, and it will never do to be off one's guard. Most cases of the insanity of doubt are perfectly harmless, but a strong suicidal tendency may develop upon slight provocation if the mental depression becomes very pronounced. The post-febrile and puerperal insanities may need constant attendance during the acute period, but are generally harmless in the later stages, and the same is generally true of the hysterical, periodical, and circular insanities.

If the patient shows a tendency to excitement and consequent undue expenditure of mental and physical energy, it is usually well to diminish this, and some mild cases will recover at once when this is done. The best drugs for this purpose are the bromides, opium, and hyoscyamine, but in using any of these great care should be taken not to depress the patient. The bromides alone will usually control only the mildest forms, and they must therefore be combined with one of the two others. It is a singular clinical fact, if I may judge from my own experience, that hyoscyamine is usually best fitted for the cases of mania, whilst it excites the melancholiacs, in whom opium has a sedative effect. The variety of hyoscyamine which I like best is the crystallized variety made by Merck, and which is put up in tablets of gr. $\frac{1}{100}$ by all the drug-houses. The dose should be gr. $\frac{1}{100}$ to gr. $\frac{1}{50}$ once or twice a day; even greater doses may be given, but they should be administered with great caution. Care must be taken constantly to ascertain whether the patient is suffering from any urinary retention which hyoscyamine is apt to induce temporarily, but which is usually harmless, although in some quite exceptional cases it may produce strangury, and should then be discontinued, at least temporarily. The uncrystallized hyoscyamine has not done so well in my hands, and the hyoscyamus of our pharmacopœia is well nigh useless. The preparation of opium in which I have the most confidence is that which has been so highly recommended by the German authors, the aqueous extract. This is now put up for me in hypodermic tablets by Mr. Fraser. In some cases of melancholia this aqueous extract, administered hypodermically twice a day, will have a markedly beneficial effect. The commencing dose should be gr. $\frac{1}{4}$, and this should be increased according to the judgment of the physician. If it has a beneficial effect, it may be continued for weeks, and should not be suddenly stopped, but the terminal doses should be gradually diminished. It seems to have quite a different effect from morphia, especially in the infrequency with which it causes constipation, and there is far less risk in forming a habit than with morphia. The combination of one of the bromides, preferably that of potash, with hyoscyamine on the one hand or with opium on the other increases the sedative effect of each drug without adding to the depression—a thera-

pentic fact to which I called attention a number of years ago. Sometimes a very happy effect can be attained by the combination of the three drugs, especially in cases of mania occurring in healthy individuals.

In post-febrile cases occurring after attacks of peritonitis and typhoid fever, and in some of the puerperal cases, the fever may range from 101° to 104° , and is apt to cause considerable anxiety and lead to the most energetic attempts at reduction. As long as the ingestion of food remains good and the patient's strength is maintained, this fever need not excite much alarm, and the attempts to reduce it by large doses of quinine and antipyretics are often much more injurious than the febrile movement itself. It should be carefully watched, as we watch the temperature in a case of typhoid, and if it runs too high, it should be met temporarily by proper antipyretic means, which should not be employed needlessly. Antipyrin and antifebrin will often act very well temporarily; so will a cold pack; but very often the most efficient remedy, if the patient's strength or abdominal lesion will permit of it, is an active saline purge, followed by a few grains of quinine and a few extra doses of alcoholic stimulant.

In melancholia the insomnia is apt to be a very distressing symptom, as well as to aggravate the disease. The best remedies to overcome it, in the order in which I catalogue them, are sulphonal, urethan, paraldehyde, chloral hydrate. Sulphonal and urethan are attended by no disagreeable symptoms whatsoever, and are therefore the most desirable of all of these, if they will act. Sulphonal is, unfortunately, very expensive and very insoluble. To overcome the last difficulty, it has been suggested that it should be given several hours before bedtime, and in a bowl of soup; but if this last is not feasible, it may be administered in a wafer or in a simple powder. The dose should be gr. xxx, to be repeated within an hour if needed. It will often produce four to six hours of very refreshing sleep. Urethan, in doses of gr. x to xxx, may be administered in solution, and often has an equally good effect. Paraldehyde has the great disadvantage of often imparting a very disagreeable odor to the breath that will continue for days, although it, too, often induces good sleep. This odor to the breath can be sometimes overcome by the administration of tincture of bitter orange root, as Kraft-Ebing has suggested. The dose is \mathfrak{zj} to \mathfrak{ij} . Chloral hydrate is, after all, the most efficacious of all these hypnotics, but it is very prone to depress the patient and to endanger a chloral habit. Trial should, therefore, be made with sulphonal, urethan, and paraldehyde before chloral hydrate is used; but the medical attendant should satisfy himself that the patient's statement about the degree of insomnia is correct, for a person suffering from insomnia is very apt to exaggerate the matter. All these hypnotics, with the possible exception of sulphonal, should be given at about the usual hour of going to sleep, the room

should then be darkened, and the utmost possible quietude should be maintained. It is often extremely advantageous, especially in cases of melancholia, to give a glass of egg-nogg or a generous dose of malt extract at bedtime, or a cup of hot chocolate, and in the milder cases or in the convalescent stage a light supper may be combined with these.

Tonics and alteratives may be administered in these curable forms of insanity, according to the rules obtaining in general medicine. Quinine, cod-liver oil, and the malt extracts are most useful. Phosphorus is occasionally a most excellent tonic in the later periods of convalescence, and should be given in the formula first proposed by Ashburton Thompson.¹ Galvanization of the cerebrum and the spinal cord is an invaluable aid in the treatment, especially in the cervical and occipital neuralgias that are so apt to follow attacks of melancholia. Galvanization of the cerebrum should be very carefully done, one large electrode (about four to five inches) being placed upon the forehead, another of equal size upon the occiput, and a gentle current of three to five milliampères passed for a period varying from two to five minutes. Great care should be taken to avoid any interruption in the current. Galvanization of the spinal cord should be done by means of electrodes, of the size just mentioned, upon the upper cervical and lower dorsal cord respectively, but a much larger current should be employed, ranging from five to fifteen to twenty milliampères, and the sitting lasting from five to fifteen minutes. General faradization is also often of great use. In some cases the electric breeze from a static or Holtz machine is extremely beneficial to the patient.

6 EAST FORTY-NINTH ST., NEW YORK CITY.

PULSATING PLEURISY.²

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PULSATING pleurisy is such a rare condition that the following case is worth placing upon record:

Strain in lifting: pain in left side; rapid effusion, at first serous, necessitating two aspirations; pyo-pneumothorax; pulsation of side; free drainage; recovery.—James F., aged twenty-three years, laborer, was admitted to the University Hospital March 3, 1888. Family history

¹ Phosphorus one grain, absolute alcohol five drachms, glycerine one and one-half ounces, spirit of wine two drachms, spirit of peppermint two scruples; dissolve the phosphorus in the alcohol with a little heat, at the same time warm the spirit and the glycerine together. Mix the two solutions while hot, and add the spirit of peppermint on cooling. Dose one-half a drachm to two drachms.

² Read by title at the meeting of the Association of American Physicians, Washington, 1888.

good; none of his relatives have had phthisis; with the exception of an attack of rheumatism in 1885, he has enjoyed uniformly good health.

On February the 23d, eight days before admission, he sprained his back by lifting a piece of timber twenty feet in length and ten inches in diameter. Three men were lifting it, but one of them let go his hold so that the patient had to exert his utmost strength to support his end of the piece. At the time he did not feel any discomfort, but that evening he became sore and stiff. He slept well, and the next day, a public holiday, he went about with his comrades, but complained on several occasions that he had sprained his back with heavy lifting. During the evening the pain grew worse and he passed a restless night. The following morning he did not feel well enough to get up and the pain had become almost unbearable. There was no cough or shortness of breath; he does not know whether he had any fever.

From the 26th to the 3d, the date of his admission, he was "up and down;" in bed part of the time, and part of the time by the kitchen fire. The pain in the back was his only complaint. He is positive he had no cough, but he was short of breath.

On admission, the patient looked very ill; face flushed, tongue dry and coated; respirations 36, temperature $100\frac{1}{2}^{\circ}$. He was able to lie down in bed. The importance attached to the lifting on February 23d may be gathered from the fact that he was admitted to the surgical ward as a case of injury to the back, and subsequently transferred. The day after admission he had much pain, of a cutting nature, in the left side, in the axillary region outside the nipple. There was also extreme tenderness on palpation.

I saw the patient for the first time on March 5th, and was struck with his distressed appearance. He lay propped up in bed, had slight dyspnœa, dry tongue, pulse 100, temperature 100° . He complained of severe pain in the left back, just below the scapula. On examination the existence of a large effusion in the left pleura was readily determined. The cardiac impulse was in the third right interspace in the para-sternal line. I noticed one or two special features in the case: the sudden onset after the strain, the remarkable rapidity with which the effusion had taken place, and the unusual amount of pain on palpation.

March 6th, a more thorough examination was made: expansion was almost negative on the left side; the intercostal spaces indistinguishable. The only cardiac impulse visible was in the third right interspace. Tactile fremitus was diminished. There was uniform dulness on the left side reaching to the clavicle and extending a little beyond the right margin of the sternum in the second interspace. By a hypodermic puncture the fluid was shown to be serous. On the principle that a full pleura demands immediate aspiration this operation was performed by Dr. Daland before the ward class, and fifty ounces of clear serum removed.

On the 5th and 6th, the patient seemed much relieved. By the 9th the fluid had reaccumulated and the heart beat was again visible to the right of the sternum, the dulness reaching to the level of the clavicle. Aspiration was again performed and two quarts of slightly turbid serum removed. He seemed to improve very much after this. The temperature kept below 99° , the dyspnœa was relieved, the appetite improved, and with the exception of pain in the left side he felt very comfortable. The signs of effusion persisted and the heart beat could be seen in the third left and the third right interspaces.

16th. The following note was made: Condition of patient has improved, pulse 84, respiration 28, temperature 98°; dyspnœa seems quite relieved, sleeps with his head low, complains only of chest pain; left side scarcely moves, and looks somewhat bulged. Cardiac impulse seen in the second and third spaces on both sides close to the sternum. The left interspaces not specially prominent. Tactile fremitus felt at the extreme apex, but nowhere else on the left side; percussion note clear to the second rib, dull below this. On the right side normal.

Auscultation: Inspiration is loud and breezy in the subclavicular and supra-scapular regions. Below these points the respiratory murmur has a distinctly amphoric character, contrasting remarkably with the breath sounds over the upper part of the lung. The voice sounds in the lower regions are very articulate; no metallic tinkling on coughing. No bell sound, nor could succussion be obtained.

19th. To-day for the first time it was observed that the percussion note in the left subclavicular region was distinctly tympanitic. Dulness extended from the upper border of the third rib, and was distinctly movable. This was very marked when he lay on his right side, in which position the percussion note in the axilla became hyper-resonant without tympanitic quality. Posteriorly in erect position at outer angle of the scapula the percussion note was distinctly tympanitic. To-day, for the first time, the bell sound was obtained with the coins.

26th. Since the 20th he has had irregular fever reaching 102° in the evening. He has, however, felt much better. The physical signs persist; in the recumbent posture the note is hyper-resonant to the lower border of the third rib. Just below the nipple it is distinctly tympanitic, from this point into the axilla there is dulness. When he turns on his right side the entire left axilla is resonant. There is amphoric breathing from the third rib, best marked in the lower axilla, where the percussion note is dull. There was noticed to-day in the fourth, fifth, and sixth interspaces in the mid-axillary line a remarkable pulsation. The whole side received a very positive shock, systolic in time and synchronous with the cardiac impulse in the third right interspace just above the nipple; the hand placed on the left side is distinctly lifted with each impulse. When he lies toward the right side the pulsation in the left axilla is a little more marked than when he is flat on his back.

27th. The common decubitus is on the left side and in this position the heart impulse is well seen just above the right nipple. The pulsation in the left mammary and axillary regions is very marked. The maximum intensity is outside the left nipple. When he turns on the right side the pulsation is most marked in the fifth and sixth interspaces in the mid-axillary line. Palpation gives a very decided heave and a distinct shock is felt. In the erect posture, the pulsation is not so forcible, though still very evident. The coin sounds are now unusually distinct. Succussion is not obtainable.

29th. The left chest looks larger and fuller than the right; it is completely immobile. The intercostal spaces are obliterated with the exception of the sixth, which is still visible. The systolic impulse on the left side is very marked, and can readily be seen by the students in the distant seats of the amphitheatre. Measurement on the right side gives sixteen and one-eighth inches, expansion one-half inch; on the left side, seventeen and one-quarter inches, practically no expansion.

Palpation.—Tactile fremitus is absent on the left side. Heaving impulse in the mammary and axillary regions well felt with the hand.

Percussion.—Clear, hyper-resonant note to upper border of the third rib. From the third to the fifth it is distinctly tympanitic. Below this, in the axillary region there is dulness. When he turns on his right side the pulsation in the mammary and axillary regions is more marked. Where the percussion note was dull, it is now tympanitic.

Auscultation.—In the left infra-clavicular region the breath sounds are loud and distinct, not amphoric. In the third and fourth interspaces the respiratory murmur is scarcely audible. In the axillary regions there is distant but distinct amphoric breathing, very clearly heard when a deep breath is taken. No special amphoric echo about the voice, the vibrations of which are not communicated to the ear; posteriorly there is distant amphoric breathing.

31st. The irregular fever has persisted and the presence of pus was demonstrated with a hypodermic needle. It was decided to open the pleura, which was done by Dr. Ashhurst; fully three pints of pus escaped. A large drainage tube was inserted in the eighth interspace below the angle of the scapula. After the operation, the heart did not return to its normal position, though it beat to the left of the sternum. Patient stood the operation very well, the evening temperature was only 98.2°.

April 3. Pulse 92, respiration 24, temperature 98°. Inspection showed a remarkable change on the left side of the chest; it already looks smaller than the right, and there is flattening in the second, third, fourth, and fifth intercostal spaces; there is very marked pulmonary resonance to fourth rib. Tympanitic in the fifth, sixth, and seventh interspaces.

With the exception of the fifth, when the temperature rose in the evening to 102°, the patient's condition was most satisfactory. He slept well, appetite good, temperature did not rise above 99°; there was free drainage through tube.

14th. Chest measured to-day: right side, fifteen and a half inches; left, fifteen and one-eighth. Discharge very light. From this time the patient improved very rapidly; temperature has not risen above 100°.

May 9. The discharge is now slight. A smaller drainage tube was introduced; the discharge gradually diminished, and he improved rapidly in strength and weight. Early in June the tube was removed.

June 10. The note is that the sinus has entirely healed. He left the hospital on the 15th, weighing 140 pounds, a gain of twenty-two pounds since April 14th.

The condition of his chest on discharge was as follows: There was marked flattening of the left side, particularly in the axillary and mammary regions. The circumference was: right, fifteen and three-quarters; left, fifteen and one-quarter inches. The percussion note was clear to the fifth rib and the spine of the scapula behind, below these points there was dulness. Loud breath sounds in the clavicular and mammary regions, feeble and distant in lower axillary, and at base.

I believe that this was an instance of pneumothorax from the outset, one of those interesting cases to which Dr. Samuel West¹ and Dr. de Havilland Hall² have called attention, in which the condition has fol-

¹ Clin. Soc. Transactions, vol. xvii.

² Ibid., vol. xx.

lowed strain in a person previously healthy. It is very improbable that on the eighth day of an acute pleurisy there would be a serous exudation of such extent as to reach the clavicle and encroach on the pleura of the other side. On the other hand, the percussion note, as is well known, may be dull in pneumothorax when the tension of the thoracic wall is very great, and I think that in this way the mistake arose. The mode of onset in a healthy man, the course of the disease, and the rapid and complete recovery favor the view that the strain had induced a pneumothorax which excited the pleurisy.

The chief interest of the case lies, however, in the curious phenomenon which developed in the fifth week after the attack.

Instances of tumors of the thoracic wall, which pulsated synchronously with the heart, are mentioned by several of the older writers—Baillon (1640), Le Roy (1776), and Pelletan (1810)—but the first cases of pulsating empyema, recognized as such, were reported by the late Dr. R. L. Macdonnell,¹ Professor of Clinical Medicine in McGill University, Montreal, who, at the time, was clinical assistant to Drs. Graves and Stokes, at the Meath Hospital, Dublin.

In the first of these cases a large tumor appeared in the cardiac region, which, after pulsating for some time, became red, tense, and shining, and then burst, giving exit to a large quantity of pus.

In the second case two tumors appeared in the lower part of the left side, presenting fluctuation and pulsation. When opened purulent matter escaped in large quantities.

In the third case two large tumors appeared in the lower portion of the left side of the chest, presenting fluctuation and pulsation. They were opened and discharged a large quantity of pus. Death followed in all these cases.

Dr. Macdonnell remarked that this condition was new in the history of empyema.

Several careful studies of pulsating pleurisy have recently been made. One by Comby,² who collected 27 cases; and a second by Kepler,³ who has collected 38 cases, only 2 of which are reported by American authors—Drs. Flint⁴ and Dillingham,⁵ from the wards of Dr. J. H. Ripley at St. Francis Hospital, New York.

I am able to add the reports of a few additional cases from this side of the Atlantic, but from inquiries which I have made from the hospital physicians of this country the condition appears to be extremely rare. Dr. George Ross, Professor of Clinical Medicine in McGill University,

¹ Dublin Journ. Med. Science, March, 1844.

² Archives Générales, 1883.

³ Deutsches Archiv für klin. Medicin, Bd. xl. 1887.

⁴ Clinical Report on Chronic Pleuritis, p. 47; and On the Respiratory Organs, p. 581, 1856.

⁵ New York Medical Record, 1884.

Montreal, has given an account of an extremely interesting case,¹ which closely simulated aneurism:

A man, aged thirty-seven years, was admitted to the General Hospital suffering from pain in the side, cough, and fever, which lasted about five days, and which followed a severe wetting. There was deficient expansion on the left side with dulness to the angle of the scapula and diminished fremitus. Within ten days the expansive movement of the left side became more impaired. The second and third intercostal spaces in front became prominent, presenting perceptible pulsation synchronous with systole of the heart. About five days after the onset of the illness he had a severe fit of coughing, in which he brought up, at least, a pint of pure pus, thick, creamy, and odorless. The cough continued for a few days, with expectoration of pus. The percussion note on the left side became clearer and the pulsating tumor entirely disappeared. The temperature fell to normal and the man's strength returned. Ten weeks from the onset the man left the hospital strong and well.

Dr. F. P. Henry, of Philadelphia,² reports a case from the Episcopal Hospital:

Woman, aged thirty years, admitted in the spring of 1880. On the left side of the thorax there were three strongly pulsating tumors—one about the size of half a large orange, in the left mammary region, directly over the central portion of the heart; a second, much smaller and acuminate—*i. e.*, with apex much smaller than the base—was situated on the left antero-inferior portion of the thorax; and a third, the largest of the three, on the left postero-inferior portion, its long diameter, about four inches, corresponding with that of the vertebral column. All these tumors possessed a strong expansile, systolic pulsation. The day after admission pus was withdrawn hypodermically from the smaller tumor. The tumor over the heart contained air, which was very evident on manipulation. Aspiration was performed, and, some time after, a drainage tube was inserted by Dr. Ashurst. The woman was removed by her friends, but was alive a year after the operation.

Dr. Janeway, of New York, writes that he has met with one case of empyema of the left side, in which the tumor was situated in the left second interspace, which pulsated when the patient stood erect, but when the patient was lying down air filled the sac.

These cases, with the thirty-eight collected from literature by Comby and Kepler, make a total of forty-two cases. The condition is almost invariably met with on the left side. In only three instances, those of Kepler, Heyfelder,³ and Geigel,³ was the empyema in the right side. Kepler thinks there may have been a doubt in Heyfelder's case, but the report seems perfectly clear. The tumor appeared between the second and third ribs on the right side, and pulsated distinctly. It may possibly have been a mediastinal abscess, as it was close to the pleural margin. Only eight ounces of pus flowed out when punctured.

In the case of Geigel, a man, *æt.* fifty-seven, had in the right mammary region a prominent projection which pulsated synchronously with the heart. The case terminated fatally. Between six and seven pounds of pus were found in the pleura.

¹ Canada Med. and Surg. Journ., May, 1885.

² Proceedings of the Phila. Co. Med. Society, vol. iii. p. 85.

³ Abstract by Kepler, l. c.

Empyema existed in all the cases, with the exception of one reported by Kepler, from Eichhorst's clinic, in which the fluid was serous. It occurred in a boy *æt.* fourteen, who, fourteen days before his admission, had been seized with a severe pain on the right side, and shortly afterward great tenderness at the seventh rib. There was dulness at the right base, which rapidly increased until it reached the angle of the scapula, and within a few days there were signs of effusion in the right thorax. On first examination the right side was enlarged, intercostal spaces prominent. There was active pulsation over the antero-lateral region of the right side of the chest reaching as high as the third rib, and synchronous with the movements of the heart. The apex-beat of the heart was 1.5 cm. above the nipple in the left mammary line. On account of suffocative symptoms aspiration was performed and 800 c. cm. of pure serous fluid removed. At a second puncture 200 c. cm. more were removed. Pulsation ceased after the withdrawal of the fluid. In fourteen days the fluid reaccumulated. An exploratory puncture showed it to be pus, and the operation for empyema was made. The seventh rib was resected and 300 c. cm. of pus removed.

In only two instances of Kepler's series was pyopneumothorax present. One reported by Féréal,¹ a man *æt.* twenty-two, had, in July, 1882, left-sided serous effusion, which was tapped, and he recovered. On October 27th there was again a large left side effusion with air. The beat was at the right nipple, and about the end of November pulsation of the whole left side was noticed, synchronous with the heart. It was most marked behind and in the axilla. The aspiration of 2½ litres of pus abolished the pulsation. In Dillingham's case the man had pneumothorax.

To these cases must be added the one which I here report, and the cases of Henry and Janeway, in both of which there was evidently air in the pleura.

Two groups of cases may be recognized: 1, the intra-pleural pulsating pleurisy; 2, the pulsating empyema necessitatis, in which there is an external pulsating tumor. The latter condition, the most common, occurred in twenty-five of the forty-two cases, probably also in a larger proportion, as there are several reports with very scanty details. The external tumor is usually single, but in five cases there were two tumors, and in one, Dr. Henry's case, three. The perforation of the pleura usually occurs in the anterior aspect of the chest, from the second to the sixth rib, sometimes close to the sternum. In three cases the tumor appeared posteriorly—at the spine, at the angle of the scapula, and in the lumbar region. In the intra-pleural cases the pulsation is usually in the antero-lateral region of the affected side, and may be evident on palpation only, or, as in the case here reported, it may be visible even at a distance.

¹ Quoted by Kepler.

Pulsating pleurisy usually occurs in cases in which the fluid has existed for some time, but that it may occur in acute cases, even with a serous exudation, is illustrated by Kepler's patient. In Ross's case and in mine the condition was also acute.

Various explanations of the phenomenon have been offered. Dr. Broadbent¹ suggests that it occurs when adhesions exist between the layers of the pericardium and between the pericardium and the chest wall. But that this cannot hold good in all cases is shown by reports of post-mortems in which such adhesions were not present. Traube regarded destruction of the costal pleura, and marked paresis of the intercostal muscles as the conditions which rendered pleurisy possible. In the case which I have reported, there was persistent tenderness of the thoracic walls, suggestive, to say the least, of involvement in an unusual degree of the parietal structures, but there was no œdema or special protuberance of the spaces, and the condition came on too early to have been due to destructive changes in the pleura. It was probably due to extreme distention of the side. Bouveret, in his recent monograph on empyema,² holds that the pulsation is met with whenever the resistance of the thoracic wall is greatly reduced, as in the way Traube suggests, or when the resistance on the part of the diaphragm is heightened, as by the deposition of a thick layer of fibrin. The fact that the abstraction of a very small quantity of fluid will at once abolish the pulsation, indicates that a certain degree of pressure is a necessary condition. Comby thinks that the pulsation only occurs when the lung is compressed and adherent to the pericardium, so that the heart movements are communicated through it to the pleural fluid, and so to the chest wall. Féréol makes a somewhat similar suggestion, holding that in every instance the condition is one of pneumothorax, in which air forms an elastic cushion between the pericardium and the fluid through which the pulsations of the heart are directly transmitted to the chest wall.

The cases have been mistaken for aneurism, and the situation in which the pulsating empyema necessitatis usually develops renders the error very pardonable. The doubt can readily be solved with a fine hypodermic needle.

The prognosis in pulsating pleurisy is not very favorable. Of the thirty-eight cases in Kepler's series, seventeen died. But we must remember that most of these cases occurred before the days of safe and frequent operations upon the chest wall.

Complete evacuation of the fluid with free and permanent drainage meets the indications for treatment.

¹ Lancet, 1884.

² *Traité de l'empyeme*, par L. Bouveret, Paris, 1888.

REVIEWS.

THE PREVENTION OF DISEASE IN TROPICAL AND SUBTROPICAL CAMPAIGNS.
By ANDREW DUNCAN, M.D., B. S. Lond., F.R.C.S., Surgeon, Bengal Army.
Svo. pp. 396. London: J. & A. Churchill, 1888.

THIS work, which was awarded the Parkes Memorial Prize for 1886, treats of the diseases incident to campaigns in tropical climates and the measures for their prevention. It is designed for the use of the army surgeon, and is especially adapted to meet the contingencies arising in connection with the British service, but many of the subjects discussed are of wider application and will not fail to interest the general medical reader.

The limitation of the subject permits of greater elaboration and of a more complete presentation of useful details than could be attempted in a work on general hygiene, such, for example, as Parkes' *Manual*, without making the volume too bulky.

The work is divided into two parts: Part first contains the general principles for the prevention of disease in campaigns in tropical and subtropical climates, and relates to the selection of men and season, marches, clothing, food, conservancy, and special prophylaxis. Part second develops the same principles of prevention in relation to the several special diseases which are encountered in campaigns in hot climates. Particular attention is given to the special etiology of each disease, as upon a knowledge of etiology depend essentially the methods of prophylaxis.

A study of the death-rate in the British Army during recent campaigns, which have extended almost continuously from 1860 to 1885, shows that, as a rule, the mortality from sickness exceeded that from wounds. The medical history of these campaigns also demonstrates the ameliorating effect of preventive measures upon the mortality by disease. It is the object of this work to show how still greater perfection may be attained in this direction. Attention is directed, first, to the prevention of disease generally; and, secondly, to the prevention of special diseases. The first chapter is devoted to a general survey of the chief factors in climate, and to a brief outline of the subjects considered in detail in the subsequent chapters.

The chief factors of climate in hot countries to be guarded against are excessive temperature and excessive humidity. In planning a campaign, therefore, the hot and rainy seasons are to be avoided. Other elements to be avoided are fatigue and insufficient nourishment. A thorough knowledge of the geographical distribution of disease is essential, as it prepares the army surgeon not only to cope with, but to antagonize the diseases incident to climate. Great importance is attached to the fact that man possesses a remarkable power of adaptation to

different climates, such adaptation being brought about mainly by judicious selection of food and clothing. Examples of military life in hot climates show that by taking advantage of this knowledge campaigns may be conducted in such climates without the occurrence of disease incident thereto.

In the first place, by the selection of men; and, secondly, by a healthy environment secured by the application of the principles of sanitary science to the preservation of health; and, thirdly, by a thorough acquaintance with geographical nosology, it is possible that a high average degree of health and efficiency may be maintained for a time by Europeans in tropical and subtropical climates.

The diseases encountered in tropical climates are divided into three groups: namely, the purely preventable, but not propagated by human intercourse, the contagious, and the infectious or so-called miasmatic-contagious group. The two broad indications of prevention are *disinfection*, or the annihilation of the poison, and *isolation* of the sick.

Personal agency is an important factor in preventing disease, and, therefore, it is essential that the soldier should be instructed in the elementary principles of hygiene. The other lines upon which the question of prevention is to be worked out, are: the selection of season, transport ships, dress and bedding, marches, camps and conditions of camp-life, food, the bivouac, camp followers, conservancy and disinfection, the hygiene of the battlefield and of beleaguered posts, and the etiology of diseases and their prevention. These subjects, with the exception of the last-mentioned, which forms the topic of the second part of the work, are clearly and fully presented in chapters second to fourteenth inclusive. Care has been taken to avoid prolixity, while, at the same time, nothing essential to a clear understanding of the sanitary *régime* of camp-life has been omitted. Advantage has been taken of the results of recent investigations in making the work an exponent of the best teachings of sanitary science.

Part second, upon the etiology and prevention of diseases incidental to tropical climates, constitutes the main division of the volume. Sound prophylaxis depends upon a correct knowledge of the etiology of disease, or, as Richardson states it, "the possession of knowledge of cause leads, almost invariably, to the possession of knowledge of prevention; that is to say, to knowledge which will lead to the removal of the cause." Acting upon this principle, the author has adopted the plan of presenting, at the beginning of each chapter, a concise statement of our present knowledge of the causation of the disease under consideration. The climatic theory of specific diseases is cast aside as being untenable and unworthy of the support of scientific medicine, while the value and significance of the great discoveries of recent years in connection with the germ theory receive due recognition. These discoveries have given precision to the measures of prevention employed in arresting the spread of diseases whose mode of propagation has been discovered, and have suggested a rational method of prophylaxis for other diseases of the same class whose etiology has not yet been definitely determined.

The special diseases liable to be encountered in campaigns and to which the principles of prevention are applied, are bowel complaints, malarial fevers, ophthalmia of armies, scurvy, enteric fever, typho-malarial fever, relapsing fever, typhus fever, plague, dengue, simple and ardent continued fever, sunstroke, pneumonic fever, cholera, smallpox,

tetanus, venereal diseases, and animal parasites. So far as is pertinent to the subject, the matter is arranged under the following heads: etiology, selection of men, selection of season, transport ships, dress and bedding, camp, marches, food, night duties, conservancy and disinfection, hospital measures, prophylactic rations, acclimatization, etc. We may take as an example the chapter on enteric fever. As the removal of the cause depends on the possession of knowledge of the cause, the study of etiology is of paramount importance. The various theories which have been proposed from time to time are closely examined and the views of leading authorities carefully considered. A brief *résumé* is furnished of the researches tending to establish the specific theory of enteric fever. A review of the evidence has led the author to favor the germ theory as that which is best supported by the results of modern investigation. But whether it be true or false, it is certainly "the best working hypothesis from a sanitary point of view." Accordingly, the measures of prevention indicated are made to comport with this central idea. It is not always possible to select men of an age not especially predisposed to the disease, but those having a previous history of enteric fever should be excluded. If the time of a campaign can be chosen, the hot months should be avoided as being especially favorable to enteric fever. The proper adaptation of clothing should not be neglected. There are advantages in selecting a high and dry site for a camp and in changing the situation at regular intervals. Free ventilation is imperative. A sandy soil is considered objectionable. The greatest importance is attached to pure and wholesome food, especially meat and milk, and strict attention should be given to the water supply. Boiling the water is advised. The treatment of excreta and disinfection of specific evacuations, and scrupulous care as to cleanliness and disinfection, and the isolation of the sick, are cardinal points. These precautions are of established value in guarding against not only enteric fever, but the whole class of zymotic diseases which continually threaten the health of the camp.

In the chapter on yellow fever the author states that Dr. Domingos Freire has not only discovered the specific "cryptococcus" of the disease, but he has succeeded in attenuating the virulence of the virus secreted by this microbe, and in obtaining a cultivation liquid which, when used for inoculation, is a prophylactic against yellow fever. He mentions that these results have been questioned by Messrs. Moxley and Harrison, of Barbadoes, but he discredits the value of their discoveries. No reference is made to the results of the investigations of Drs. Gibier and Sternberg, which seem to disprove Dr. Freire's theory, and throw the whole subject once more into doubt. Dr. Duncan favors the opinion that the poison is reproduced in the human body and is given off from it to infect the healthy, and that the disease is propagated by human intercourse, and, accordingly, the means of prevention are especially directed to the isolation of the sick and disinfection of the stools and articles in contact with the sick.

The chapter on cholera contains a concise and well-written summary of the views of the etiology of this disease. The causal relation to the disease of the germ discovered by Koch is regarded as having been proved. Human intercourse is believed to be the chief factor in propagating the malady. Upon the indications thus presented are based the measures of prevention.

The remaining chapters are treated in an equally practical manner. The matter throughout is judiciously selected, the views of different authors fairly criticised, and the conclusions supported by a strong array of facts. The systematic arrangement of the divisions of each chapter and the free use of marginal notes are of great advantage for quick reference. The author shows a wide familiarity with the literature of his subject, especially that of recent date. The work is progressive, and is an excellent exponent of modern views of the art and science of preventive medicine in its application to campaigns in hot climates. As such it is a most useful addition to the library of the army surgeon. The book is well printed on good paper, and has the additional advantages of a catalogue of literature and a full index.

W. H. F.

A HANDBOOK OF THE DISEASES OF THE EYE AND THEIR TREATMENT.

By HENRY R. SWANZY, A.M., M.B., F.R.C.S.I., Surgeon to the National Eye and Ear Infirmary; Ophthalmic Surgeon to the Adelaide Hospital, Dublin, etc. Second edition. 8vo. pp. xvi. 455. With 149 illustrations. London: H. K. Lewis, 1888.

IN ophthalmic literature the great English works of Soelberg Wells and Mackenzie are still without a successor.' Indeed, it may well be, that the day of the text-book of a thousand pages from a single hand is gone. From the present number of writers on the subject, we look for the Encyclopædia of Ophthalmology, the work of many hands, and suspect that its advent is delayed only by the uncertainty of financial success. But while it is delayed, "hand-books," "manuals," etc., multiply. And of these the one which comes nearest to replacing the older master works is, unquestionably, this one by Swanzy.

The literary execution of the work is excellent, it is clear and concise throughout; and all parts of the subject are well covered. The revision of the present edition has been exceptionally complete; and among the references which are given to really important papers and monographs, are some to publications made well on in the current year. The specialist, who has particularly valued the first edition of the work because of the chapter it contained on "The Motions of the Pupil in Health and Disease;" will be pleased with the, mainly new, chapter on "Amblyopia and Amaurosis due to Central and Other Causes," containing a very clear account of visual localization, including the phenomena of Hemianopsia, Alexia, Dyslexia (want of power to read more than a very few words consecutively, first described by Berlin, last year), and Psychical Blindness.

On each topic now under discussion among ophthalmic surgeons, our author expresses his distinct opinion. In cataract extraction he holds strongly to iridectomy and the use of the bandage; and rejects irrigation because "it does not seem to be free from danger, and the ends proposed to be attained by it can be accomplished by other, and safer means." With Schweigger, he regards the accompanying amblyopia as a cause, rather than an effect of squint. Of the actual cautery for the treatment of the *ulcus serpens*, or infecting ulcer of the cornea, he says:

"It seems to give the best percentage of cures with the least amount of opacity." And about an operation which has recently attracted considerable attention, on account of its use for purposes of professional advertising, the facts are well stated thus: "In cases where the whole cornea is leucomatous and, consequently, where no restoration of sight can be obtained by means of an artificial pupil, *transplantation of a portion of clear cornea* from a rabbit's eye, or from a freshly enucleated human eye, has been repeatedly performed by ophthalmologists in various parts of the world. Very many of these operations have been perfectly successful in a surgical sense, *i. e.* in so far as the healing-in of the transplanted flap was concerned; but, with two exceptions, they all ended in disappointment, in consequence of the flap not retaining its transparency. In the course of a week or two, the transplanted portion invariably became as opaque as the leucoma had been before." The exceptions referred to are two of von Hippel's cases, in one of which "the flap continued transparent and vision = $\frac{20}{cc}$ " twenty months after the operation.

To elucidate the Holmgren tests for color-blindness, a card of sample colored wools is given, which will enable one to select from any fair variety of zephyrs a good set for practical use. We miss, however, the colored plates of various conditions of the eye-ground, which we are beginning to look for in any complete treatise on ophthalmology; and many of the woodcuts are of rather inferior quality. These are, however, but minor defects in a very valuable book, which, we predict, is destined to grow in the favor of the profession.

E. J.

A TEXT-BOOK OF PHARMACOLOGY, THERAPEUTICS, AND MATERIA MEDICA.

By T. LAUDER BRUNTON, M.D., D.Sc., F.R.S., Assistant Physician and Lecturer on Materia Medica at St. Bartholomew's Hospital. ADAPTED TO THE UNITED STATES PHARMACOPŒIA, by FRANCIS H. WILLIAMS, M.D. Third edition. 8vo. pp. 1305. Philadelphia: Lea Brothers & Co., 1888.

THE rapid appearance of successive editions of Brunton's *Pharmacology* is not surprising. Books of great value are duly appreciated by the profession and quickly become popular. This is shown by the popularity of a number of recent works on materia medica, which present in a condensed, well-digested form all that has been thus far acquired in regard to the action and uses of medicines. That improved editions should appear at comparatively short intervals is a natural consequence of the rapid growth of the science of pharmacology. The experimental method of studying the action of drugs, which is now pursued in a great number of pharmacological laboratories, is rapidly increasing our knowledge. The results of such laborious investigations are published usually in elaborate papers. But these contain so many details pertaining to the peculiar methods of experimentation adopted, that few practitioners have time to read them, or they are published in journals to which few have access, or in languages which few can read. Fortunately, the

authors of the standard works on materia medica carefully examine such original papers and reproduce in a condensed form whatever throws more light on the physiological action of drugs; hence, the marked improvement and numerous additions found in each successive edition.

Among the recent works which fully represent the most advanced state of pharmacology, Brunton's treatise is regarded as holding the first place. It is not difficult to understand how it has attained this exalted position. Before writing his book, Brunton had taught materia medica for many years, and had himself pursued the experimental method of research. His careful experiments had done much to clear up the mode of action of some important medicines; the results he had found were corroborated by other investigators, and were referred to as trustworthy by all writers on pharmacology. He had thus acquired a reputation for profound attainments which eminently fitted him for the great task of composing a treatise on materia medica. It is needless to add, that his book fully justified the most sanguine expectations, and that the masterly section on *general pharmacology and therapeutics* has received the unqualified admiration of all thorough students of pharmacology.

Since the issue of the first edition, three years ago, Brunton has ceaselessly labored to improve his book, and in every respect to keep it up to date. Improvements and additions are found in every part. Especially has the section on general pharmacology and therapeutics been carefully revised. Among the more important additions are brief discussions on the nature of ptomaines, the struggle for existence between the organism and the microbes which invade it, the pathology and treatment of tremor, the action of drugs on the retina, the arrest of colds, the selection of remedies in the treatment of cough, the pathology and treatment of bronchial asthma, and the action of drugs on the movements of the stomach. The section on materia medica has been improved in arrangement, and the new remedies which have recently gained some reputation have been briefly described, especially hypnone, urethan, iodol, pyridine, antifebrin, and saccharin.

These additions, together with some forty new illustrations, and a greatly extended index of diseases and remedies, have considerably enlarged the volume, so that it contains 275 pages more than the first American edition. Notwithstanding the large size of this work, the feature which first impresses the reader familiar with books on materia medica is the conciseness of the descriptions of the action and uses of medicines. At first it may be supposed that the descriptions are imperfect, and that fulness has been sacrificed for brevity; but a careful examination of the account of any important medicine will show that nothing of importance has been omitted.

Perhaps, in regard to some of the recent additions, the author, in order not too greatly to increase the bulk of the volume, has studied brevity too much. Thus, the description of the recently discovered use of calomel is so brief that it may possibly mislead some practitioners, and thus bring into discredit a really valuable and powerful agent. All the author says is the following: "Calomel is a useful diuretic in some cases of dropsy, especially when due to heart-disease. It must be given in doses of four or five grains, repeated when necessary, salivation being prevented by a chlorate of potassium gargle, and diarrhœa by small doses of opium." The reader will probably understand this passage as meaning that one dose of four or five grains will produce a diuretic

effect; and that the same dose may be successfully repeated when the urine has again become scanty. According to Jendrassik (*Deutsch. Arch. f. klin. med.*, Bd. xxxviii. p. 499), who discovered the diuretic action of calomel, and to whose article Brunton refers, doses of three grains, repeated from two to four times daily, will usually not produce an increased secretion of urine before the third day.

To the student of medicine, who is determined to understand the action and uses of medicines as thoroughly as is possible at the present time, this book may be recommended as greatly superior to all others; but let him remember that, to acquire the mine of knowledge it contains, he must study it closely and laboriously, and especially master the section on general pathology and therapeutics. S. N.

INDEX-CATALOGUE TO THE LIBRARY OF THE SURGEON-GENERAL'S OFFICE, UNITED STATES ARMY. AUTHORS AND SUBJECTS. Vol. IX. MEDICINE (POPULAR)—NYWELT. 4to. pp. [13] 1054. Washington: Government Printing Office, 1888.

THE opening twelve pages of this volume contain abbreviations of titles of medical periodicals employed in the Index-Catalogue, being the second addition to those published in the seventh volume, while the rest of the volume is occupied with the catalogue proper. This part covers more than a thousand double-columned pages, containing "13,151 author's titles, representing 6,834 volumes, and 12,818 pamphlets. It also includes 9,999 subject titles of separate books and pamphlets, and 29,120 titles of articles in periodicals." To this brief description nothing can well be added which will improve the reader's idea of the magnitude and scope of the work, yet some may be interested to learn that as we glanced over the closely printed pages of this ninth volume we found that no less than thirty-six of them were concerned with the subject of *Monsters*.

It has been our agreeable duty for several years to comment upon these volumes as they have annually issued from the press, and it will be readily seen that we can have nothing new or interesting to say at the present time concerning a work which has won for itself such a good degree. The high opinion we have entertained of the value of this work remains unchanged, and is only confirmed by the passage of time. As the work steadily approaches completion the profession at large is to be congratulated that the end of its desires in this direction draws near, and he who does not appreciate its scientific value can only be excused upon the plea of ignorance or indifference. Some among us are naturally impatient to see the work finished, yet when the minute care required in putting a book of this kind through the press is borne in mind, we presume greater rapidity of issue is not reasonably to be expected. While thus congratulating the medical profession upon the progress of a work which must ever remain a monument to the grandeur of the science it loves, we should fail alike, both in duty and inclination, did we not utter words of sincere thanks, and sympathizing encouragement, to him who conceived the idea of this great catalogue, and who has

thus far carried it on with the signal ability and energy which many among us have got to consider, as a matter of course, in anything with which Dr. Billings has to do. S. A.

A CONTRIBUTION TO THE NORMAL AND PATHOLOGICAL ANATOMY OF THE VOCAL BANDS. I. CYSTIC GROWTH; II. GLANDULAR APPARATUS. By DR. C. M. DESVERNINE. Published in the *Crónica Médico Quirúrgica* of Havana, and re-written in English by the author. With four full-paged colored plates. 8vo. pp. 20. Havana, 1888.

DR. DESVERNINE has taken advantage of an opportunity to examine carefully the histologic relations of a cystoma of the vocal bands *in situ*, and to study the subject carefully. He has thus made a valuable contribution to the histology of the vocal bands. A man sixty years of age with carcinoma of the lower third of the œsophagus had suffered for some months with hoarseness which had been due to a fusiform thickening of the middle third of the right vocal band, the longitudinal tension of which in phonation had become impaired, while efforts to produce tones high in pitch were attended with violent depressions anteriorly of the corresponding arytenoid cartilage.

After his death, Dr. Desvernine subjected the larynx to minute microscopical examination. The thickening mentioned was found to occupy the anterior portion of the middle third of the vocal band and measured 6 mm. in its greatest diameter. It fluctuated somewhat on pressure and gave exit on section to a few drops of clear mucoid fluid. The cavity exposed measured 5 mm. in its transverse diameter, and 3.5 mm. in the vertical. The remainder of the larynx was normal.

A series of transverse sections was made from the anterior thyroid extremity of the vocal band to the arytenoid region. The walls of the cavity were found to be composed of dense, fibroid connective tissue, poorly vascularized and more abundant interiorly. The fibrillary constituents of this capsule intercrossed more or less obliquely to the sagittal plane of the larynx. We cannot follow the minute histology further without reproducing the article *in extenso*. Suffice it to say that a conclusion is reached which relegates this growth to the class of retention cysts of glandular origin due to inflammatory process beginning in the epithelium of the gland, and progressing excentrically to the paraglandular connective tissue which had become condensed, layer by layer, into a highly fused fibrous envelope.

This result has prompted the author to a minute study of the glandular apparatus of the vocal bands. He finds that Coyne, in discovering the glandular apparatus of the vocal bands described by him in 1874, had failed to detect the full number of glands in these structures. In the mucous membrane covering the vocal bands, Desvernine has found glands in the supra-glottic and in the infra-glottic portions, while the glottic portion is unprovided with them. In the superior portion he finds, though not constantly, a glandular group, deeply seated and more or less close to the fibres of the thyroarytenoid toward their ventricular border; the excretory ducts being directed obliquely toward the glottic

border, and terminating on the superior surface of the bands at a variable distance from the papillary free border. Sometimes these glands are found deeply seated between the fasciculi of the thyro-arytenoid ligament or entirely subjacent to it. The number of supra-glottic glands does not exceed three or four

The sub-glottic region in which Coyne described but two glands, has been found richly supplied with glandular structures. They are all imbedded in fibro-elastic structures, and their excretory ducts are directed obliquely upward and inward. The cystic growth in the instance referred to originated in the intra-ligamentous glandular tissue. The interpretation given of the production of deep-seated cysts is as follows. The excretory ducts traversing fibro-elastic structures in a frequent state of energetic distention are thus subjected to violent compression. When congestive or inflammatory conditions become prolonged and intense, the excretory ducts participate in the general process of hypernutrition, their walls become thickened, their elasticity impaired, and thus conditions are established which promote the permanent fusion of their walls.

J. S. C.

BEOBACHTUNGEN UEBER MALARIA INSBESONDERE DAS TYPHOIDE MALARIASFIEBER. Von DR. P. WERNER, Narwa. 8vo. pp. 70. Berlin: August Hirschwald, 1887.

OBSERVATIONS UPON MALARIA, ESPECIALLY TYPHOID MALARIAL FEVER. By DR. P. WERNER, Narwa.

IN the year 1875, Dr. Werner was appointed one of the physicians employed to look after the health of the workmen and others occupied in building the Samara-Orenburg railroad in southeastern Russia. He had supervision over the section running from Samara, in the direction of Orenburg, and also had charge of the sick on the Samara-Sysran line, running from Samara in a southwesterly direction. The region was notoriously malarious, and the opportunity for studying malarial fever in its varied forms was exceedingly favorable.

Among the many cases of fever treated at that time, quite a number commenced with a distinctly intermittent character, and then assumed a continued form with typhoid symptoms. These complex symptoms had previously been occasionally observed in private practice in Samara, but only in isolated cases. It was not until the fall of 1874, in the local prison, that a collection of such cases was observed. The epidemic which occurred the following years—1875, 1876—among the laborers employed in building the railroad, furnished rich material for investigating the nature of this peculiar phase of malarial fever, and upon this study are based the observations contained in the present brochure.

The three main divisions of the subject are: the symptomatology of typhoid malarial fever, the principal sequelæ and complications of malaria, and the etiology, morbidity, and mortality of malaria. Under symptomatology are described the period of incubation; the different forms of typhoid malarial fever; namely, the common form, the ady-

namic form, the comatose form, and the hemorrhagic form, and the course of the fever.

The cachexia, the dropsical appearances, the disease of the intestines, and the implication of the circulatory system form the subdivisions of "the principal sequelæ and complications of malaria."

From a review of the etiology, symptoms, and post-mortem appearances of the various forms of malarial fever described by Dr. Werner as typhoid malarial fever, it is evident that most of the cases were malarial fever of adynamic type, commencing as intermittent or remittent, and lapsing into a continued fever with typhoid symptoms. The description of the disease agrees in the main with that given by Woodward to a class of cases observed during service in the Army of the Potomac in 1861, and to which he unfortunately gave the name of typho-malarial fever.

The disease began as a simple intermittent or remittent. "After seven to ten days the fever became continued, or the phenomena peculiar to typhoid showed themselves: diarrhœa, abdominal tenderness, delirium, dry and brown tongue, and the like. Post-mortem showed, as a rule, *only* a simple catarrhal affection of the mucous membrane of the intestines, with accumulation of lymphoid cells in the lymphatic vessels." He described another group of cases in which "typhoid infection was predominant," the disease being essentially enteric fever occurring in individuals saturated with malaria, and modified somewhat in its course by reason of the presence of this poison. To the former group belong chiefly the cases described by Dr. Werner.

The author's observations upon the period of incubation and the etiology of the disease apply to malarial fever, and exclude the idea of connection with enteric fever. He discovered no evidence of the spread of the disease from contact with the sick. It was clearly evident that a visit to the infected locality, particularly a protracted visit, or at least a visit by night or in the early morning was necessary in order to contract the disease. There was no proof of infection by the alimentary canal nor by drinking water. The infecting material, he believes, is introduced by inhalation, and, to some extent, by the skin, especially if abraded. The latter view is based upon the inoculation experiments of Dochman, Gerhardt, Marchiafava, and Celli.

Dr. Werner has done a service in taking advantage of his opportunity for studying and describing the graver forms of malarial fever, but he is unfortunate in selecting the term "typho-malarial, since the claim for its distinctive type cannot be substantiated, and its use is misleading. Facts do not support the view that there is a hybrid of enteric fever and malaria, or a transformation of malaria into enteric fever, the circumstances giving rise to such a belief being the occurrence of severe forms of remittent fever lapsing into a typhoid state, or the occurrence of enteric fever in individuals who had previously been affected with malaria or who simultaneously suffered from an attack of malarial fever.

W. H. F.

LANGUAGE OF MEDICINE. A MANUAL GIVING THE ORIGIN, ETYMOLOGY, PRONUNCIATION, AND MEANING OF THE TECHNICAL TERMS FOUND IN MEDICAL LITERATURE. By F. R. CAMPBELL, A.M., M.D., Professor of Materia Medica and Therapeutics, Medical Department of Niagara University. 8vo. pp. 318. New York: D. Appleton & Co., 1888.

UNTIL within a recent period, practical ability to deal with disease has, in this country, so far outweighed everything else in the appreciation of medical students and practitioners, that studies not bearing directly upon diagnosis and therapeutics have had comparatively little consideration. Respect for scholarship does not obviate the necessity for our acknowledging that, in years past, many excellent practitioners have achieved and deserved professional reputation, whose orthography conformed to that of neither Worcester nor Webster, and whose syntax often differed from that of the books.

Now that a higher standard of requirement prevails, even with a prolonged time for preparation, medical students may well be embarrassed in view of the multitude of *armamentæ* of knowledge placed before them for acquisition. Discretion, as well as assiduous industry, is called for on the part both of teachers and of students. What is needful, and what is only accessory? This is a most important question, from the beginning to the end of a student's training.

On one part of this question, Dr. Campbell's opinion is clearly set forth in the book now before us. He says (p. 190):

"European practitioners are almost uniformly men of high classical training, and are able to use the Latin language correctly, but in America the majority of medical students have had no experience whatever in Latin composition. Even in our literary colleges of late, the classics have been crowded out to make room for a score of sciences of which the student acquires a very superficial knowledge, so that the modern college graduate excels in nothing, and, at the same time, has lost a golden opportunity to familiarize himself with the ancient languages which are the basis of scientific nomenclature."

Discussion of the vexed question between classical and scientific college studies would be here out of place. We can only, in passing, express the opinion that it is very much easier for a student in any of our best colleges, to-day, to obtain suitable preliminary instruction bearing upon a medical education than it was fifty years ago. This view is maintained consistently with a very high valuation of the benefit of early general training and culture, no matter how definitely specialized may be one's final pursuit.

A pressing need of professional students now, especially, of course, of those who are not college graduates, is that of condensed manuals upon secondary or auxiliary subjects. General knowledge of fundamental elements, correctly learned, is not superficial, or by any means useless knowledge. This truth is too much ignored by many theoretical educators; but it is of vital consequence, and may, when understood, save many a zealous scholar from despair.

Linguistic knowledge, even of Latin and Greek, valuable as it is, must, in a careful balance, rank as secondary to that of the branches of

the usual medical curriculum. Yet a certain amount of acquaintance with Latin, at least, and with medical etymology, belongs rightly in the preparatory stage of the student's work. Dr. Campbell, therefore, deserves the thanks of the profession for this book; the thorough digestion and assimilation of it will be worth a great deal to every medical student. Most practitioners, also, will find many things in it of decided profit to their thought, if not immediately to their daily work. Dr. Campbell's remarks upon the frequent mispronunciation of technical words by physicians, are especially instructive.

After a brief, but interesting introduction, Dr. Campbell gives, in less than thirty pages, an outline of the "Historical Sources of the Language of Medicine." Then follow two chapters, on "The Origin of Words," and on "The Life and Death of Words." Part II. is concerned with "The Latin Element in the Language of Medicine." Under this head are discussed orthography, orthoepy, the Latin parts of speech and their declensions, conjugations, etc., through twenty chapters, covering 135 pages. Chapter XXI. treats of prescription-writing.

Part III. considers "The Greek Element in the Language of Medicine." Naturally, this occupies much less space than the Latin element; notwithstanding the large proportionate use of Greek words in nomenclature.

Part IV. deals with "Elements Derived from the Modern Languages;" French filling much the largest space. A general index, and an index of (nearly 2400) words complete the book.

On the whole, the plan of this work is a good one. It is intended for a manual, to be studied by those who need it; being, accordingly, provided with vocabularies and "exercises," writing out which may increase the student's familiarity with many details. Some not unimportant oversights will, we trust, be corrected in an early second edition.

H. H.

A MANUAL OF OPHTHALMIC PRACTICE. By CHARLES HIGGENS, F.R.C.S.E., Ophthalmic Surgeon to Guy's Hospital; Lecturer on Ophthalmology at Guy's Hospital Medical School, etc. Small 8vo. pp. viii. 314. With 48 illustrations. Philadelphia: P. Blakiston, Son & Co., 1888.

SHOULD the New Zealander, who is to grope among the ruins of the British Museum, discover this book when all contemporary knowledge of its subject has passed from the minds of men, he would, doubtless, prize it highly; for it fairly reflects the state of ophthalmic practice in the present, or in the recent past. It is not a bad book. But in its own time it lies under the fatal disadvantage, that its field is covered by books that are better. It is of that "concise and practical" sort which may please the rule-of-thumb worker, but will certainly not tend to lift him above his rule of thumb. The publisher's part has been well done; but it is a matter for regret that such fair form should not have been given to matter of more general value.

E. J.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

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LOCAL ACTION OF HELLEBORINE.

MM. VITTOVIO and ELVIDIO used aqueous solutions of helleborine and instilled them under the eyelids in contact with the cornea. They thus obtained anæsthesia of this membrane which lasted longer than the anæsthesia produced by cocaine.

They maintain that at the same time the mobility of the eyelid was preserved, that the pupil did not dilate, and that the intraocular tension was not modified.

Used in subcutaneous injections helleborine caused local anæsthesia, and simultaneously produced cardiac disturbances. From these facts we may conclude that helleborine is a local anæsthetic which should, however, be used with great discretion.—*Gazette Hebdomadaire*, September 21, 1888.

[It should not be forgotten that helleborine has a very powerful action on the heart, and that the dose is only a small fraction of a grain.—ED.]

TREATMENT OF RECENT PLEURITIC EFFUSION BY THE ADMINISTRATION OF SALINE CATHARTICS.

The utility of saline cathartics in removing dropsical fluids, as demonstrated by Dr. Matthew Hay, may also be made serviceable to assist in removing pleuritic fluid in certain cases and obviate the necessity of operative interference.

Two cases under the care of P. BLAKIE SMITH (*British Medical Journal*, October 13, 1888) were successfully treated by two drachms of magnesium sulphate dissolved in as small a quantity of hot water as possible, given twice a day. The patients were directed to abstain from fluids. After eleven days the signs of effusion in the left side, dulness up to the second rib and cardiac pulsations to the right of the sternum, had all disappeared.

Another case was treated with half an ounce of magnesium sulphate twice a day, with as little liquid in the diet as possible.

Patients with poor physique are, of course, ill-suited to this vigorous treatment, nor should the prompt use of the trocar be neglected where dyspnoea exists.

ACONITE IN ACUTE DYSENTERY.

DR. BEATSON recommends tincture of aconite in this disease; it should be administered in doses of one minim half hourly for eight to ten hours, and then one minim hourly. The frequency of the stools and pain and fever are said to be diminished by this treatment.—*Indian Medical Gazette*, March, 1888.

AMMONIUM SALTS AND CAMPHOR AS STIMULANTS.

According to the experiments of PROFESSOR BINZ, chloride of ammonium is a stimulant to the nervous system, the respiration and blood pressure are both increased in a few minutes by one-fifth to a quarter.

Camphor is also a good stimulant to the respiration when its failure is threatened, as in opium poisoning.—*Deutsche medicinische Wochenschrift*, November 8, 1888.

BORIC ACID SOLUTION IN OTITIS MEDIA SUPPURATIVA.

In the ordinary cases of chronic suppurative otitis media, DR. THEOBALD, of Baltimore, recommends the use of boric acid in powder, applying it by means of insufflation; but in acute cases, in which the destruction of the drum-head was not extensive, he preferred to use a saturated solution of boric acid.

The advantages of the solution are that the healing of the perforation in the drum-head was more certain to be brought about when it was used than when the powder was employed, since the latter, by too suddenly drying the ear, and also, by its mechanical action, frequently prevented the restoration of the drum-head. In acute cases it was found to be safer, since it could not obstruct the free escape of discharge from the middle ear, as the powder sometimes did, and it could be applied by unskilled hands more effectually than the powder.

The strength of the solution which he commonly employed was fifteen grains to the ounce. If the discharge was profuse, the ear was syringed with this three times a day, and less frequently as the otorrhœa declined.

DR. GRUENING has reported three cases of suppurative inflammation of the middle ear in which a fatal result was attributed to the introduction, by insufflation or by packing, of boric acid powder into the auditory canal.—*New York Medical Journal*, October 6, 1888.

GLUTEN BREAD.

DR. WOLTERING, writing in the *Allgemeine medicinische Centrallb. Zeitung*, strongly recommends the more extended use of gluten as an article of diet, both on account of its extremely nutritive qualities and of its very low price. He shows by means of tables of analyses that pure gluten bread is some three

times as nourishing as meat, and that bread made with the addition of forty per cent. of pure gluten contains more albumen than hare or chicken of the best quality.—*Lancet*, September 22, 1888.

MEDICINES FOR NURSING MOTHERS.

PROFESSOR FEHLING has made a useful series of experiments to determine the drugs that may be safely given to nursing mothers. Among the drugs tested were:

Salicylate of sodium, which was found dangerous to the infant when given to the nurse in doses of forty-five grains daily.

Iodide of potassium may be safely given in doses of three grains daily.

Iodoform is gotten into the system of the child more easily through the nurse than by giving it directly to the child. Even when the wounds of the mother were dressed with iodoform the drug (iodine?) was observed in the urine of the child.

An important statement, if true, is that mercurial salts given to the mother do not affect the infant at all, or at least very slightly. Experiments with opium and morphine convinced Professor Fehling that twenty-five drops of tinct. opii (German Pharmacopœia) and grain one-tenth to three-tenths of morphine could be safely given to the mother.

Chloral could be given in doses of twenty-three to forty-five grains. Atropine very easily affects the child, even in small doses.

With regard to the general diet of the mother, Dr. Fehling thinks that the practitioner should correct the popular notion of prohibiting certain foods, such as salads or acids. He conducted his experiments with citric acid, mineral acids, and vinegar; no proof of the transmission to the child could be shown, and no disturbance in the general condition of the child was observed. The mother's milk remained alkaline during all the experiments.—*Medical Record*, July 28, 1888.

LIPANIN.

This substitute for cod-liver oil is made from the finest olive oil after the directions of v. Mering. It is said to be readily taken and well absorbed. Patients treated with it do not suffer from any digestive disturbance, and their condition is improved.—*Centralblatt für den medicinischen Wissenschaften*, October 20, 1888.

PARALDEHYDE IN OBSTINATE VOMITING.

DR. LA MOURE has found small doses of paraldehyde successful in relieving obstinate vomiting from ovarian irritability, with sympathetic stomach disorder, and in the distressing nausea of migraine, with the most gratifying results.

The formula employed is as follows:

R.—Paraldehyde ℥xl.
Elixir simpl. ʒj.—M.

S.—One teaspoonful in a little water, repeated in half an hour if required.

This small dose is not hypnotic in its effect. But few doses are usually required. The only objection to its use is its disagreeable odor.—*Albany Medical Journal*, June, 1888.

ANILINE IN PHTHISIS.

BERLATERS reports eight cases of tuberculosis treated with aniline. Four were in the early stage; three were in the beginning of the last stage of the disease and one was so far advanced that his death was expected within a few weeks. All of them, after using the aniline, were improved or cured: the fever disappeared completely; the appetite was better; the weight increased; the physical signs improved, and the bacilli in the sputa were less numerous.

The aniline was administered in doses up to twelve drops, with a few drops of alcohol and by inhalations of twenty-five to thirty drops each. Some of the patients were given, in the aggregate, two and one-half ounces of aniline.

It is advisable to interrupt the administration of this remedy from time to time for some days, especially if the patients complain of lassitude and weakness in the legs.

Sometimes a greenish-yellow color of the skin was observed, which disappeared after the aniline was withheld for a few days.—*Centralblatt für klinische Medizin*, September 8, 1888.

HYDROFLUORIC ACID IN PHTHISIS.

In a Hungarian medical journal, DR. GAGER has published an account of seventeen cases of phthisis in which he employed the hydrofluoric acid treatment. From the results obtained he is led to think that this treatment is, in some cases, capable of exerting a really beneficial influence. As an inhalation-chamber he made use of a compartment of a wooden hut, which was well boarded and had a well-fitting window-sash and door; its capacity was about 250 cubic feet.

In this the patients, one, two, or three at a time were seated, their clothes being protected from the injurious effects of the acid by sheets. The gas was manufactured in an adjoining compartment and conveyed to the ceiling of the inhalation-chamber by a leaden pipe. For the details of the preparation of the gas, the reader is referred to the *Lancet* of September 22, 1888.

As a rule, the patients were ordered one sitting of an hour's duration daily; occasionally two sittings were given.

In order to ventilate the apartment it was always necessary to open the door and window from three to eight times during the hour.

All of the patients on whom this treatment was tried presented tubercle bacilli in their sputum; the author's investigation was specially directed toward the "anti-bacillary" property of the hydrofluoric acid.

All renal cases were excluded. All the patients complained, during the first three sittings, of smarting and itching in the nose, of smarting in the eyes and often of sneezing, which lasted for days. Some patients had increased cough and even streaks of blood in their sputum; the inhalations having, indeed, to be stopped for some days on that account. Thirteen of the seventeen patients found their appetite increased after the inhalations.

In one case there was a slight epistaxis.

In five cases the bacilli disappeared from the sputum, a marked improvement in the symptoms being also noted.

In seven cases there was a distinct improvement of the physical signs. The body weight increased in twelve patients, but the amount of increase appeared to bear but little relation to the improvement of the general condition—*e. g.*, in one case in which the bacilli disappeared and in which the physical signs improved there was no increase in the weight at all, and in another there was no improvement, though the weight increased nearly four pounds.

Three of the patients had pyrexia; of these, one lost it entirely, together with all the bacilli and expectoration; in the second case the fever decreased, but in the third it continued as high as ever. One of the patients suffered from night-sweats; these entirely disappeared.

In seven cases the vital capacity increased to the extent of from three to twenty cubic ounces. In two cases somewhat severe irritation of the laryngeal mucous membrane was set up, thus showing that this kind of treatment is contraindicated in cases of laryngeal phthisis—at all events, only an exceedingly small quantity of the gas has to be given. In five cases, including one, in which laryngeal complications existed, no improvement could be noticed; one very advanced case died. No evil consequences presented themselves in any of the cases.—*Lancet*, September 22, 1888.

MEDICINE.

UNDER THE CHARGE OF

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DIPHTHERIA.

HOYER (*Memorabilien*, 1888, 129) defines his views on the nature of diphtheria and describes his method of treating it. Considering it to be a disease produced by a microorganism invading a tonsil whose epithelium is lost, he devotes his attention to the prevention of this invasion, or to the destruction of the bacteria which have already attacked the tonsil. For this purpose he paints the tonsils with a solution of thirty parts of gallic acid, sixty parts of distilled water, and ten parts of glycerine. A brush of fine bristles is employed and considerable pressure exercised against the diphtheritic membrane. He carries out this procedure three times in succession, repeats it every six or eight hours, and continues the treatment until the diphtheritic membrane has disappeared. He prescribes also a gargle of one part of chlo-

rine water and three parts of distilled water to be used several times between the applications to the throat. The same mixture is to be injected into the nose in cases of malignant diphtheria. Persons who are in attendance upon patients with the disease should also use a gargle of the same nature. The author declares that he cannot say sufficient in praise of gallic acid for the purpose indicated. It renders the putrefactive bacteria innocuous, hinders their growth and increase, by its astringent action on the tonsils protects against their absorption, and by the same action loosens the deposition upon them. It is also entirely uninjurious to the patients.

THE CONSTANT BLUE-GUM STEAM TREATMENT OF DIPHtheria.

J. MURRAY-GIBBES (*Australian Med. Journ.*, October 15, 1888) writes again in favor of the use of eucalyptus in diphtheria, having recommended it a year ago. By giving the vapor of the oil with steam, we not only gain the beneficial effects of the latter, but obtain an antiseptic action also. He keeps his patient under a tent-like covering in a warm, moist atmosphere containing a volatile oil, obtained by placing leaves of the eucalyptus in a jug of boiling water. In this atmosphere the patient remains as long as there is any inflammation of the throat. Since 1881 he has treated 163 cases in this way, and with only one death. In the practice of a colleague 305 cases were treated in the same manner, and with only one death. In the section of New Zealand in which he practises blue-gum steam has become a household remedy, on account of the confidence which the people have in it for sore throat, cold, bronchitis, and other chest affections. The author says that the antiseptic steam prevents the decomposition of the membrane in the throat, and the consequent septic absorption. It also prevents the spread of the disease to other members of the family.

THE TREATMENT OF DIPHtheria WITH INSUFFLATIONS OF SUGAR.

C. LOREY (*Deutsch. med. Wochenschr.*, No. 46, 944, 1888) highly recommends the treatment of diphtheria by the insufflation of very finely powdered sugar upon the tonsils, pharynx, posterior nares, the entrance to the larynx, and, after tracheotomy, through the canula. As a result of careful observation on eighty cases of diphtheria of all forms, and at all ages, he concludes that under this treatment the duration and extent of the diphtheritic deposit, and the danger of general infection can be lessened. The odor of decomposition also disappears, the mucous membrane of the tonsils and pharynx becomes more natural in appearance, and is coated with an abundant mucous secretion, and the false membrane softens and becomes detached. In many cases in which the larynx was involved the insufflation loosened the cough and the threatening symptoms gradually ceased. The favorable action of sugar on unhealthy granulations has long been recognized. In the pharynx the fine particles of sugar penetrate into the mucous membrane and cause a flow of its secretion toward the surface, loosening the membrane, and perhaps washing away the microorganisms. General treatment is, of course, to be employed also, and for this purpose the author prefers apomorphia, and later an easily digested iron preparation.

ACETIC ACID IN DIPHTHERIA.

F. ENGLEMAN (Deutsch. med. Wochenschr., No. 46, 945, 1888) made extended bacteriological studies on many of the different substances usually employed as local applications in diphtheria, in order to determine their power to prevent the growth of microörganisms. After detailing somewhat the nature of his experiments, he concludes:

1. Diphtheria must be treated on the same principles which are generally accepted as applying to analogous processes in surgery and obstetrics.

2. The majority of the substances recommended for local application in diphtheria deserve no confidence, since they do not exercise sufficient antiseptic power.

3. Almost only those act with certainty which in sufficient concentration have proved themselves of value in surgery also. Like these acts the hitherto little esteemed acetic acid.

4. Most of the powerful antiseptics are illy suited for use in diphtheria, on account of their local or general poisonous action.

5. Acetic acid appears especially to be recommended on account of its certain antiseptic action, its harmlessness, and the slight irritation which it produces. It possesses also in high degree the power of penetrating animal tissues.

ACROMEGALY.

O. FRAENTZEL (Deutsch. med. Wochenschr., 1888, 32, 651) reports another instance of this disorder occurring in a male patient fifty-eight years of age, who died of phthisis. While still a boy his extremities attained such a size that every one noticed them; and when desiring to choose an occupation his hands were so large that he became a wheelwright, being unfitted for any more delicate trade. At the age of twenty cough developed, and at about the same time there was noticed a well-marked polydipsia, which continued through life. He consumed large quantities of spirits, and when unable to obtain this after entering the hospital, drank daily several litres of water instead. There was never any excessive hunger. The urine contained neither albumin nor sugar. Examination of the patient showed a decided overgrowth of the bones and soft parts of the face and terminal portions of the limbs. The nose, lower jaw, lips, and cheeks, were strikingly large; the distal portions of the forearms thick, the bones of the hands and feet large, thick, and widely separated, while the soft parts were swollen and doughy. There was no enlargement of the thyroid gland, and no dulness over the manubrium of the sternum.

A daughter of this patient, aged eleven years, exhibits an enlargement of the hands and feet, which is clearly the beginning of the same condition shown by the father. Her face has still a normal appearance. No other instance of the disease can be found in the family. The author details the careful measurements made of the overgrown parts at the autopsy, and describes the conditions of the organs. It is particularly to be noted that there were no remnants of the thymus gland, the thyroid gland was normal, and there was a scarcely noteworthy increase in the size of the hypophysis cerebri.

THE THERAPY OF TABES DORSALIS.

STEMBO (*Berl. klin. Wochenschr.*, October 29, 1888, 884) says that though so much is written concerning tabes, yet but little appears as to its treatment. This is because it is so generally considered to be beyond the reach of treatment, though many well-known writers have shown that at least some cases prove that it is not incurable. The author has had under his care thirty-nine cases of tabes in the last few years, and has reached the conclusion that the sooner treatment can be begun the better result may be expected. Syphilis is certainly a predisposing, if not a proximate, cause of tabes, and yet this fact seems to be of little value in the therapeutics of the disease. Twenty-four of the thirty-nine cases were distinctly syphilitic, but not one of them was benefited by anti-syphilitic treatment. Iodide of potash has never helped his tabetic cases, and he has likewise obtained no good results from arsenic, belladonna, ergot, and strychnine. He has found antifebrin in full doses very serviceable in relieving pain, and decidedly superior to both antipyrin and phenacetin. Cocaine was often useful in gastric crises.

Great difference of opinion exists as to the value of hydrotherapy and what form of it is to be employed. The author believes that the bathing resorts with warm baths are preferable in the early stages, especially when the patients are anæmic and weakly. In the more advanced states, in strong individuals, in whom an increased blood supply is desired, the cold water cure may be tried. Care must be used, however, that it is not overdone, and cold sea baths especially must be given with the greatest caution.

Electricity is by all means the best treatment for tabes, yet it must be employed with precision, and not by the patients themselves. The constant current has been the one chiefly employed in Germany, England, and Russia, while the interrupted current is also used in France and America. Carefully describing his methods of applying it, the author says that he uses in some cases the constant current applied to the back, followed by the faradic current, or by franklinic electricity applied to the same locality. In other cases he employs the galvanic and faradic currents simultaneously, in the manner described by De Watteville. He reports three cases as examples of the surprising improvement which can follow electrical treatment.

A CASE OF CHOREA ACQUIRED BY IMITATION OF THE MOVEMENTS OF
ANOTHER CHOREIC PATIENT.

SCHROEMANN (*Deutsch. med. Wochenschr.*, 1888, 32, 662) relates an interesting case of this affection. A woman of eighteen years of age was brought into the hospital suffering from chlorosis with its various symptoms. There were, however, no evidences of hysteria. Her condition was decidedly improving, when there was taken into the hospital a case of chorea. This case was put into a separate room which the other patients were forbidden to enter. The order was disobeyed by the chlorotic girl, who saw the choreic movements and for her own amusement imitated them. When, however, she attempted to stop, she found that her muscles no longer obeyed her will, and that she was unable to do so. When examined by the writer, she presented the symptoms of chorea in a high degree. With the administration of

chloral decided improvement began, but the exhibition of the case in the clinic immediately brought the symptoms back with such violence that it was necessary to remove the patient quickly from the room. Under the continued administration of chloral improvement again commenced, and the symptoms had nearly disappeared at the time the case was reported.

THE THERAPEUTIC USES OF HYPNOTISM.

HERTER (*Boston Medical and Surgical Journal*, November 15, 1888) adopts Lieboldt's classification of trance in six divisions, preferring it to the arrangement of Charcot. The proper method of producing hypnosis, advocated by Lieboldt and Bernheim, consists in first securing the confidence of the patient, and then telling him to look the operator steadily in the eye and to think of nothing but going to sleep. The process may be materially aided by suggestive remarks addressed to the patient, and by placing two fingers upon the face; the fingers being finally pressed gently upon the eyelids. Men and women are about equally susceptible to hypnotism. Although so much has been written on its use in hysteria, the indications for employing it are far from clear. It may be of service in some forms, but recovery, if secured, is not permanent. Hysterical paralyses, especially abductor paralysis of the larynx, hysterical amblyopia and amaurosis, and hysterical convulsions are often decidedly benefited. One need never be discouraged by the first trial to secure hypnosis in a case of hysteria. Not much is to be hoped from it in hysterio-epilepsy. The improvement in chorea is often rapid and marked, especially when the movements are general; a number of daily sittings, continued for months, being usually required. In insanity the results are not satisfactory. In delirium tremens the effect is often excellent, and the method finds a hopeful field in the treatment of the alcohol habit. In masturbation it has been used with success; and in incontinence of urine in children it has, in the hands of Lieboldt, been employed with a large percentage of cures. Herter doubts whether it is of any real advantage in joint affections, though good can be expected in recent neuralgia, and he has succeeded in cutting short or mitigating the attacks in certain instances of migraine. The occurrence and duration of menstruation have been influenced by it in a few cases. It is not to be recommended in surgery as a substitute for the ordinary anæsthetics, except in cases in which the latter are contra-indicated. In insomnia it can often be employed with good results, gradually substituting it for drugs. As regards the use of hypnotism in parturition, the author concludes that it induces sleep, and is in no way prejudicial to the uterine contractions; that it has no tendency to produce post-partum hemorrhage or any other bad result; that it is in no way comparable to chloroform in labor, and should only be used in the rare cases in which the usual anæsthetics are contraindicated.

The bad results following it, and which have been urged against it, can for the most part be entirely antagonized by suggestion. He proposes, as a general rule, that no one should be hypnotized without first obtaining his or her formal consent, and that the operation should always be done in the presence of a third person. No suggestions should ever be given, except those necessary for the patient's improvement in health.

ANTIPYRIN IN HEADACHES.

In the many cases of headache treated by antipyrin given by the mouth, there are found some which are not benefited by it. Many of these, says SACHS (*Ther. Monatsh.*, October, 1888, 488), will be surprisingly relieved by the hypodermatic injection of the remedy, if a point painful in some degree can be found in which to make it. The intense pain caused by the procedure, however, deters both patient and physician from a continuance of the treatment, if the first injection be not successful. The author, therefore, recommends that five minutes before the antipyrin is given, an injection of two cubic centimetres of a one per cent. solution of cocaine be made at the same point. In this way he has been able to give antipyrin without producing pain.

COCYGYDYNIA IN MEN.

This affection, confined almost exclusively to women, was seen in two male patients by PEYER (*Centralblatt f. klin. Med.*, 1888, 37, 657). In both cases it was undoubtedly of a neuralgic nature, consisting of a reflex neurosis depending on abnormal conditions of the sexual apparatus. There had been no fall or blow on the coccyx, nor was there any other cause to be discovered than that stated. In the one case attacks appeared especially liable to come on after coitus, and in the other to develop during sleep; while the passage of feces, or a sudden or violent bodily movement was entirely without influence. Treatment consisted solely in that applied to the genital apparatus, and was entirely successful, no surgical interference being necessary.

A CASE OF OSTEOMALACIA IN A YOUNG ADULT MALE.

D. BURGESS (*Medical Chronicle*, October, 1888) reports a case of osteomalacia occurring in a man twenty-one years old, and ending fatally. At the age of fifteen he fell and fractured one or both arms. Up to the age of seventeen, there was but slight, if any, curvature. The legs seemed to have failed first, and for over two years the patient had not been able to go about. His hands then became useless, and for four months he had been bedridden. There was no history of rickets in the family. Examination revealed decided deformity of the thorax, the ribs being markedly bent, the spine showing considerable anterior and lateral curvature, and the sternum being prominent. The humeri, radii, and femora were bent like green-stick fractures, or old fractures united at an angle. The tibiæ were inclined as in knock-knee; the muscles of the trunk and limbs were greatly wasted, and there was correspondingly great loss of power in them. There were some contractures, chiefly of the flexors. There was some pulmonary catarrh, but in other respects the viscera appeared normal. The patient had for some time been subject to convulsive seizures, and shortly after died in one of them. It was stated that in this case the legs were bent hither and thither, and took all sorts of shapes. No autopsy was permitted.

In order to determine on a diagnosis between osteomalacia and late rickets, the author first reviews some of the cases of the former disease which have been reported, and concludes that bending of the ribs does not necessarily

indicate rickets, nor does the situation of the deformity of the extremities indicate osteomalacia. The long and intractable course of the case reported was in favor of osteomalacia, though not a proof of it. The apparently bony union of the fractures proved nothing. The principal fact against rickets was the late age of the appearance of the disease. No case is recorded of rickets beginning as late as puberty. Osteomalacia, under twenty, is a very rare disease, only ten instances being recorded up to 1866. Yet a fatal case not beginning until after puberty, is probably osteomalacia, and not late rickets. Trousseau and others have held the view that the two diseases were but different aspects of the same affection, the differences in the deformity being due to the altered conditions of the skeleton in infancy, puberty, and maturity. While this is simple and comprehensive, the author considers the supposition contradicted by the occurrence in infancy of well-marked instances of osteomalacia.

BASEDOW'S DISEASE CURED BY ELECTRICITY.

H. PELZER (*Therap. Monatsh.*, October, 1888, 464) reports the case of a woman, forty-two years of age, who for several years had suffered from nervous palpitation of the heart. At an examination a year previously there had been slight exophthalmus and struma, with great palpitation. In spite of varying internal treatment her symptoms grew constantly worse, the struma especially increasing in extent. Finally all internal medication was abandoned, and the constant current employed, one pole being applied over the heart and the other in the intersterno-cleido-mastoid fossa; the *séances* lasting ten minutes. Later the current was also passed transversely through the spinal column. An ice-bag was placed over the heart at night. For the first five weeks scarcely any change could be noticed, but after this rapid improvement began, first in the slowing of the pulse, then in a diminution of the exophthalmus, and finally in the retrogression of the struma; until after six months the symptoms of Basedow's disease had entirely disappeared, and the general condition was entirely normal.

EPISTAXIS TREATED BY OLEUM ORIGANUM.

LOUIS FISCHER (*Med. Record*, November 17, 1888) recommends the administration of the oil of origanum in epistaxis, having used it with very gratifying results. He gives five drops three times a day an hour after meals, and increases the dose gradually; one case having taken twelve drops three times a day. Owing to its disagreeable taste and smell, it is best given in emulsion or in gelatine capsules.

THE TREATMENT OF WHOOPING-COUGH WITH QUININE.

B. FEVERS (*Centrall. f. klin. Med.*, 1888, 546) adds renewed testimony to the value of quinine in the treatment of pertussis, drawing his conclusions from the results in a large number of cases in Ungar's clinic, and finding that in large doses the drug was able to cut the disease short in many patients, and to ameliorate the symptoms in others. The medicament is, however, so difficult to administer by the mouth that the author made trial of hypodermatic

injections. He used the carbamide of quinine, and later the ethyl-sulphate of the base, both of which are easily soluble in water; two or three parts in ten of warm water seemed to be the strength borne the best; administered once or twice a day, in doses as large as were ordinarily given by the mouth. The effects were undoubtedly good, but there were cases in which inflammation and necrosis of the tissues occurred at the point of injection. The author hence reserves this plan of treatment for those patients to whom quinine cannot be administered in any other way, either by capsules, cachets, or by the stomach-tube; or by whom it is invariably vomited, and yet the symptoms are so threatening that a speedy and certain improvement is to be desired.

THE DISINFECTION OF THE RESPIRATORY TRACT.

Under this title, EICHHORST (*Wien. med. Pressc.*, No. 42, 1481, 1888) condemns the employment of disinfectant inhalations as unsatisfactory and often irritating or unpleasant. Some drug given internally for this purpose he has used and recommends myrtol. A capsule containing 0.15 gramme of myrtol will, within an hour after swallowing it, produce a distinct odor of the drug upon the breath. In treating putrid processes of the lungs two of these capsules should be given every two hours. In this way the author has been able entirely to overcome the evidences of putrescence; the amount expectorated diminishing also, while the general condition improved. He reports several illustrative cases. The drug appears to have no influence whatever on the development of tubercle bacilli.

THE TREATMENT OF PYOTHORAX AND PYOPNEUMOTHORAX BY THE SETON METHOD OF THOROUGH DRAINAGE.

THOMAS E. SATTERTHWAITE (*Med. Record*, November 17, 1888, 581) details the methods of treatment employed by him in fourteen cases of pyothorax or pyopneumothorax, and concludes that the operation of thorough drainage by the formation of a counter-opening and the introduction of a seton is one that can be successfully practised on both children and adults, though cases may occur in chronic empyema in which it is not practicable. In pyopneumothorax and in chronic empyema it should be performed as soon as possible; but the indications for it in acute empyema are not so plain. The location of the openings is not so important as that one, at least, shall be in the most dependent part of the thorax, according to the position which the patient occupies. If in bed, one opening should be in the axillary line; if not confined to bed, preferably behind and about four inches below the angle of the scapula, and four inches from the spines of the vertebræ. The cavity should be washed at least twice daily with some antiseptic solution, and all known means should be adopted to permit the free escape of matter. In acute empyema without external opening a portion of the fluid should be withdrawn by aspiration, both in order to determine its nature and to allow the lung to expand somewhat by relieving the pressure, and because recovery has ensued in some cases after one or more aspirations. When, however, incisions have been made, they should be enlarged and their closure prevented by some form of dilator. Should a new collection of matter be found in the pleura it may be treated in the same manner as the first collection.

The success of the treatment depends chiefly upon providing a free exit for the matter as soon as it forms; but nutritious and even stimulating diet should be enforced. Judging from his own cases, he would estimate the percentage of cures as seventy-five per cent. He has no doubt that it may be of great benefit in phthisical cases in which pyothorax or pyopneumothorax has developed. The operation is comparatively easy and safe, the only danger being puncture of the heart, liver, or spleen. The radical operation of resecting a rib is one which may occasionally be necessary in neglected cases.

CREASOTE IN THE TREATMENT OF PHTHISIS PULMONALIS.

DR. AUSTIN FLINT presents the following conclusions based on ten cases treated with inhalations of creasote, in his service during the past summer at Bellevue Hospital, by the method suggested by Dr. Beverley Robinson. The improvement noted in these cases, when Dr. Flint took charge of the wards, was so considerable that he directed the treatment to be employed in all the cases of phthisis pulmonalis in the male wards, with the exception of a few in the last stages of the disease. This report will be read with interest in connection with Dr. Robinson's paper on page 1 of this issue of the JOURNAL.

The records of ten cases reported show that creasote by the stomach and the inhalations, in cases of solidification without cavities, effect prompt and decided improvement in all phthisical symptoms, with increase in appetite, weight, and strength, even with surroundings much less favorable than would obtain in many cases in private practice.

In cases with small cavities much less improvement is to be looked for, but some benefit may be expected.

In cases with large cavities the treatment seems to have little more than a palliative influence.

The observations here recorded are defective as regards the influence of the treatment upon the bacilli. In one case, with large cavities, it was noted that the number of bacilli was diminished. No other examinations for bacilli were made during or after treatment.

No estimate was made of the relative value of creasote taken into the stomach. As regards the inhalations, it is assumed that the chief benefit was derived from the creasote, the spirit of chloroform and the alcohol rendering this agent more volatile, and soothing the mucous surfaces. The inhaled vapor undoubtedly penetrated by diffusion as far as the air-cells. It is by diffusion that fresh air, anæsthetic vapors, etc., penetrate the lungs, and cases of pneumokoniosis illustrate the fact that even solid particles may be carried to the pulmonary vesicles.

He has employed the method of inhalation here described, conjoined with other treatment, in private practice with good results. In a case of irritative cough of several months' standing, with slight bronchitis and emphysema, but no signs of phthisis, which resisted ordinary treatment, three inhalations produced complete relief, and the cough had not reappeared at the end of four weeks.—*New York Medical Journal*.

INTERMITTENT HÆMOPTYSIS IN PHTHISICAL PATIENTS.

LOEWENTHAL (*Centralblatt f. Klin. Med.*, 1888, 39, 705) says that intermittent hemorrhage from the lungs is uncommon, usually occurring after scor-

butus. He finds in the literature only one instance of it in a phthisical patient, and thinks it well, therefore, to report one occurring in his own practice. The patient was a man with infiltration of both apices, who suffered from bloody expectoration with cough, at intervals of eighteen hours. There was slight enlargement of the spleen. Between the attacks of hæmoptysis there was no cough. After treatment with full doses of quinine the enlargement of the spleen disappeared, and the hæmoptysis ceased. The occurrence of the hemorrhage is to be explained by the presence of an eroded vessel, filled by a clot. Every eighteen hours the increased blood pressure, brought about by the influence of malaria, removed the clot and hæmoptysis consequently occurred.

SURGERY.

UNDER THE CHARGE OF

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EXTERNAL PURULENT PACHYMEINGITIS AFTER INFLAMMATION OF THE MIDDLE EAR.

DR. EG. HOFMANN (*Deutsche Zeitschrift für Chirurgie*, 28 Band, 1888) reviews at great length the literature of the above subject, gives an elaborate table of cases, and arrives at the following conclusions:

Purulent external pachymeningitis is the most frequent intracranial disease following middle ear inflammation; but on account of the vagueness of the symptoms has only been recognized during life in a few cases. It constitutes the usual link between the aural disease and the fatal termination of other intracranial affections, such as meningitis, inflammation of the sinuses, and abscess of the brain. The occurrence of these maladies is favored by long continuance of the pachymeningitis and retention of the pus. If in middle ear disease the bones are affected, the complication of pachymeningitis must be suspected. If, after opening the mastoid process, the threatening symptoms continue, or evidences of a beginning meningitis or phlebitis of the sinuses make their appearance, the treatment must be operative, and consists chiefly in opening the mastoid cells and in freeing the inflamed dura

ELECTROLYSIS IN ANGIOMA AND GOITRE.

MR. JOHN DUNCAN records (*British Medical Journal*, November 3, 1888) his experience in the treatment of nævi, cavernous angioma, pulsatile angioma, and goitre, by means of electrolysis. Many of the cases which he details were of extreme gravity, and had been rebellious to other treatment. His results in the angiomatous cases were uniformly successful. He worked with a current of between forty and eighty milliamperes, but considers that

really a matter of small importance. A galvanometer is of no value in operations where the duration is determined by the palpable and visible effects produced. It is very different in cases in which we cannot see and feel the gradually increasing swelling, tension, and hardness. Here a means of measuring the current in operation is essential.

Five to eight cells of large size and good electro-motor force are most convenient to work with. It is not necessary to use a large number of cells if both poles be introduced as they ought to be. The body is as good a conductor as acidulated water if the resistance of the skin be avoided.

He introduces both electrodes (insulated, so that the operation may be truly subcutaneous), but works chiefly with the negative pole. It is to be remembered that the effect is produced invariably by shrivelling up and destroying the vascular walls; and that coagulation of the blood is a matter of very secondary importance; therefore, he keeps moving the negative pole about, and penetrating as many vessels with it as possible, because its destructive effect is more powerful and diffuse than that of the positive. He maintains it in one place just long enough to bring about a decided effect and then changes to another.

In these operations the process is essentially distinct from that by which Apostoli and others have produced their effects upon uterine tumors. However his results may be brought about, it is not by electrolysis proper, it is not by the decomposition of fluids and solids at the poles of the battery. It may be neurotic or vascular, or trophic or osmotic, it is not electrolytic, and to call it so is no doubt a misnomer.

Mr. Duncan says he has not yet had sufficient experience to be able to define with precision the value of electrolysis in goitre, but he gives the results so far as they have gone of fourteen cases. Three are still under treatment, having been recently operated upon, and already showing beneficial results. One is a fibro-cystic, another a strongly marked exophthalmic, the third a vascular goitre, with considerable dyspnœa. Eleven remain, two or three having slight vascular and exophthalmic symptoms, others with slight dysphagia or dyspnœa, all of the vascular variety. Four of them it was impossible to trace. These cases were in the infirmary for only a day or two, and the records of their addresses have been imperfectly kept. In two cases, however, they returned for a second operation, having been benefited by the first. Of the others, six have been absolutely cured, and the seventh has the tumor still in no way changed by one operation. Mr. Duncan thinks that these results are very encouraging, and that with greater experience we will be able to operate with more confidence. The chief difficulties have hitherto laid in the manipulation of the needles, and our want of knowledge of the effects which might be produced on surrounding structures in so important a locality.

SPLENECTOMY.

DR. THEODOR KOCHER records (*Correspondenz-Blatt für Schweizer Aerzte*, November 14, 1888) a case of extirpation of the spleen in a woman fifty-one years of age. She presented before the operation a large tumor occupying the whole left lateral abdominal region, with but little mobility, extending to the symphysis, and for four finger-breadths above the umbilicus. A linear

incision, 25 centimetres in length, was made to the left of the navel, two-thirds of it lying above, and two-thirds below that point. The purplish spleen and its thick, rounded anterior edge came immediately into view. It was of such dimensions that it was found necessary to make a second transverse cut through the rectus abdominis at the level of the navel. The organ was then turned and the broad mesenteric-like fold of peritoneum was ligated piece by piece. Many vessels could not be reached on account of the shortness of the fold, and at these places large hemostatic forceps were employed. Numerous tight adhesions were found; while they were being carefully tied off, a large bloodvessel was ruptured, and the bleeding was so severe that the tumor had to be rapidly removed, the remaining adhesions being torn through, and hemorrhage checked by long hemostatics and sterilized compresses. There was momentary failure of the pulse, but no other alarming symptoms. In sewing the wound the deep layer was first stitched, and then the superficial ones. The patient did very well, and was discharged from the hospital six weeks after the operation.

This, according to Kocher, was the first operation for extirpation of the spleen performed in Switzerland, and one of the most successful, considering the size and the immobility of the tumor, which had been performed anywhere. Forty-seven cases of splenectomy have been published. In eighteen the splenic tumor was leucæmic. These have all resulted fatally. In ten a wandering spleen was found, and of these eight recovered, the operation being greatly facilitated by the lengthening of the ligaments and the long pedicle of the tumor. The mortality has increased in direct proportion with the size and immobility of the tumor, and with the number and firmness of the adhesions. The difficulties of technique, of course, increase greatly at the same time. It is essential for success in splenectomy that the operative procedure be so cautious and deliberate that adhesions are not torn, or cut at points where the contained vessels cannot be ligated, or, at least, compressed by the hand or forceps. The incision, advocated by Czerny and Péan, upon the border of the rectus is to be preferred. By approaching the tumor from the right side, and by way of its under surface, the important point of entrance of the vessels into the hilus is made visible and accessible. For this purpose the original incision may always be enlarged by a transverse cut on a level with the umbilicus, through the rectus, and, if necessary, through the other abdominal muscles.

It now appears unquestionable that patients can not only survive the loss of the spleen, but that they may do so without showing serious disturbances of any sort. The increase of the white blood cells and corresponding decrease of the red corpuscles, observed in Credé's, Czerny's, and Péan's cases, were also found in the above case, making their appearance before the end of the third week, and persisting as long as the patient was under observation. The microscopic examination of the tumor gave negative results, showing chiefly a hyperplasia of the splenic tissue, and thickening of the trabeculæ. Lympho-sarcoma was, however, suspected, the numerous metastatic deposits seen and felt during the operation, and the persistent increase in the size of the liver, favoring this theory.

DR. J. R. NILSEN reports (*The Medical Record*, December 1, 1888) a case of splenectomy for floating hypertrophied spleen in a woman aged thirty-six

years. The tumor was about eight inches long, by four or five wide, freely movable. There was a history of malaria. As there were constantly increasing pain and sense of weight in the abdomen, loss of rest, increase of tenderness, and absence of leucæmia, and as the dangers of gangrene from twisting of the pedicle, the development of intra-abdominal congestion and inflammation, the formation of adhesions, were manifest, an operation was decided upon. An incision was made through the interspace between the recti, which diverged between the navel and the pubis considerably to the left.

The tumor was free from adhesions. At the moment of ligation of the pedicle there was marked failure of the circulation. The ends of the artery in the stump were tied with catgut. Recovery was complete.

There was neither secondary hemorrhage, enlargement of the thyroid or of other glands, perverted appetite or sensations, disturbance of functions in glands and organs supposed to act vicariously, nor, indeed, anything very noteworthy in the condition during convalescence.

THE DIAGNOSIS AND MEDICAL TREATMENT OF ACUTE INTESTINAL OBSTRUCTION.

Of the many conditions formerly treated exclusively by the physician, but recently brought within the province of the surgeon, intestinal obstruction in its various forms is one of the most important, and although Dr. R. H. Fitz, in his excellent paper (*Boston Med. and Surg. Journ.*, Nov. 15, 22, 29, 1888), limits himself chiefly to the consideration of the medical treatment, his conclusions are, on that account, no less interesting to the surgeon. After analyzing the symptoms of strangulation, intussusception, twist, gall-stone, strictures, tumor, etc., he concludes that the symptoms, apart from stoppage of the bowels, upon the presence of which the physician must rely to establish a diagnosis of acute intestinal obstruction, are abdominal pain, nausea, or vomiting, abdominal tympany, and abdominal tumor. The presence of fever, the occurrence of hiccough or jaundice, abnormal conditions of the urine, are all occasional and subordinate. The cardinal symptoms are pain, vomiting, tympany, and tumor. The vomit may become fecal, and the tumor may be simulated by visible intestinal coils. But the presence of these cardinal symptoms is evidence of other disease than acute, internal, mechanical obstruction of the bowels. They may result from external causes of obstruction, and the various herniæ are to be excluded. They may be the symptoms of a peritonitis in the absence of mechanical intestinal obstruction. The various causes of peritonitis are, therefore, to be excluded.

It is important to remember that, in the presence of urgent symptoms of acute obstruction, the source is found in the lower abdomen in more than four-fifths of the cases. The physician should remember that in the light of exact knowledge nearly all cases of acute, mechanical, intestinal obstruction die, unless relieved by surgical interference; that curative, medical treatment has proven of sure avail in only a limited number of cases of intussusception, possibly in a few of twist in the large intestine, and in certain cases of gall-stones in the small intestine; that his first duty, after relieving pain, is to determine the capacity of the large intestine; that this is best accomplished during the first two days following the initial pain, before

tympany makes the task more difficult, and pathological changes cause it to be more dangerous; finally, that the means employed for this purpose represent the most efficient curative agent in his control.

Notwithstanding that thirty-one per cent. of the cases recovered without any operative treatment, it does not follow that such a recovery is to be anticipated, especially if it is to be associated with the evacuation of a slough. In such cases, in addition to possible death from peritonitis, annular stenosis may occur, or strangulation from lymph-bands may occur. The medical treatment of intussusception consists essentially in the use of mechanical measures for the reduction of the displaced portion of the bowel. The beneficial effect of such measures is all the more possible since it is evident that spontaneous reduction may occur. The mechanical treatment consists of rectal injection or inflation, preferably the former, and replacement by a repositor. Almost indispensable advantage is to be derived from the associated use of anæsthesia. Massage of the tumor and inversion of the body are important adjuncts.

In the medical treatment of obstruction from gall-stones, it is to be remembered that in the cases here collected a fatal result followed all surgical treatment after the first week, and that five cases recovered under medical treatment after this date. The condition of the patient alone must determine the nature and duration of the treatment. Opiates, cathartics, and electricity have all been used in cases ending with recovery. In the light of the published experience of the past eight years, the medical treatment of acute obstruction is limited to the use of injections during the first three days, under sufficient degrees of pressure, within fixed limits, to determine the patency of the large intestine. If it proves impassable, the case is no longer medical, but surgical.

If the large intestine is readily distended, and a diagnosis of gall-stones is admissible, and the condition of the patient is not urgent, opium is to be given; laxatives and electricity may be tried, but they are of doubtful expediency. If medical treatment is of no avail, and surgical treatment is refused, the efforts of the physician are restricted to the relief of pain and distress by narcotics, intestinal punctures, and gastric siphonage.

In conclusion, acute intestinal obstruction is diagnosticated by exclusion. Its seat is fixed by injection. Its variety is determined by its seat, the age, antecedents, and symptoms of the patient. Its treatment is surgical, on or after the third day, if the symptoms are urgent and forced injections fail to relieve.

LUMBAR COLOTOMY, WITH SPHINCTER FORMATION.

DR. GEORGE E. BREWER reports (*The Medical Record*, December 1, 1888) the case of a child fifty-two hours old, with the following symptoms: The mother stated at that time that, although the child had nursed almost constantly since its birth, there had been no discharge from the bowels; that during the past twelve hours there had been noticed a marked restlessness, a gradual distention of the abdomen, and a slowly increasing lividity of the skin. In reply to questions, she further stated that there had been no vomiting, and that the urine had been passed normally. An examination of the perineal-region showed not the slightest trace of an anus, the skin extending from the scrotum to the coccyx in an unbroken outline. There was, however,

a slight thickening of the raphé midway between these two points. Pressure over the abdomen gave no visible or palpable impulse in the perineal region. An aspirating needle was introduced in several directions, with negative results.

Operation was determined upon and was performed as follows: An excision was made in the raphé of the perineum from the base of the scrotum to the coccyx, and the various structures of the pelvic outlet divided layer by layer, care being taken not to wound the urethra or bladder, the exact position of the former being indicated by a previously introduced gum-elastic bougie.

During the progress of this dissection frequent attempts were made to detect an impulse, caused by the crying of the child, or pressure made over the abdomen, which would indicate the presence of a blind rectal pouch. The result of these examinations was, however, always negative. After the perineal incision had been carried to a depth of nearly two inches, so that the thin layer of tissue separating the pelvic cavity from that of the abdomen moved freely with each respiration, an examination was made to determine, if possible, any sign which would indicate the presence of the blind extremity of the gut. The entirely negative result of this examination led to an abandonment of further search in this locality, the closing of the wound antiseptically, and an attempt to find the colon in the lumbar region.

The child was placed on the right side, and the left lumbar region exposed and made prominent by means of a folded sheet placed underneath. An oblique incision was made, three inches in length, parallel with the last rib and midway between it and the iliac crest. This included the skin, superficial fascia, and a thin layer of adipose tissue. The underlying structures were then carefully divided on a director until the transversalis fascia was reached. Through this could easily be distinguished the distended colon pressing against the outer border of the left kidney. The fascia was next divided, and the kidney pushed aside; the colon then presented in the wound, and that portion which is free from peritoneum, lying between the two lateral longitudinal bands of muscular fibres, was easily transfixed with a needle, and drawn to the external surface of the wound. Here the gut was united to the skin by two rows of sutures, three on each side. A longitudinal incision was then made into the bowel, midway between the two rows of sutures, and a large amount of meconium evacuated. The external wound was then closed to the border of the intestinal opening, and a dressing of absorbent iodoform gauze applied.

The operation was entirely successful. An interesting feature of the case was the prolapse of the opposite wall of the intestine through the incision. A tendency toward this was noted at the time of operation, but was thought to be due to the great intra-abdominal distention. On the following day a nodule appeared at the orifice of the wound, which gradually increased until a T-shaped portion of inverted intestine lay on the external abdominal surface. At either end of the cross-piece was an opening; the upper, connecting with the transverse colon, extended only about half an inch from the wound, while the lower, leading to the blind extremity of the bowel, extended from this point nearly two inches. Each of these openings was closed by the sphincter-like action of the double layer of circular muscular fibres present in the prolapsed portion. At first, attempts were made to reduce this prolapse, until it

was found that the muscular contraction at the upper orifice served to prevent a constant discharge of fecal matter; and that, while ordinarily closed, it was easily overcome by contraction of the abdominal muscles. The prolapsed portion was, therefore, allowed to remain in place for eight weeks, to insure a firm union between the peritoneal surfaces; when the lower portion, connecting with the blind extremity, was ligated off, leaving only the upper opening connecting with the transverse colon. The child was living and well six months later.

TREATMENT OF PENETRATING SHOT WOUNDS OF THE ABDOMEN.

DR. W. B. COLEY (*Boston Med. and Surg. Journ.*, October 18, 1888) publishes a series of interesting tables in reference to wounds of this description. He has divided 74 cases into three classes: 1, those operated on within the first twelve hours; 2, those operated on after twelve hours; 3, those in which the time of operation was undiscoverable. Class 1 contains 39 cases; percentage of recoveries, 43.6 per cent. Class 2 contains 22 cases; percentage of recoveries, 22.7 per cent. Class 3 contains 13 cases; percentage of recoveries, 57 per cent. He thinks this record argues strongly for early operation. He believes that the majority of surgeons are in accord as to this question, but notes the opposing views of M. Réclus, who says that while the existence of a penetrating wound of the abdomen by a revolver ball is, to English and American surgeons, an indication for immediate laparotomy, and while for them perforation of the intestine is the necessary corollary of all penetrating wounds, and death the fatal result of all such wounds if left to themselves, yet that his own experiments show that perforation is not necessarily present in a penetrating wound of the abdomen, since in one out of thirty-seven of his cases a bullet traversed that part of the abdomen occupied by the intestines without injuring them. He absolutely denies that every perforating wound of the intestine causes death, and says that this idea arose from two things—first, confusing revolver with rifle bullets; second, results of experiments on dogs. He claims that the conditions are more unfavorable in dogs, on account of the much greater shortness of the intestine, and greater tendency to fecal extravasation. In order to render the conditions more equal, he gave a purgative previous to experimenting, and in this way saved a number.

In regard to the mortality of perforating wounds, he says that cure is quite frequent, and to support this statement he mentions the cases collected by Saint Laurent and Mr. Nogues, nearly fifty in number, in which recovery followed without laparotomy. He further adds, that no cases were admitted that did not have the pathognomonic signs of perforation; for example, hæmatemesis, bloody dejections, fecal matter coming from wound, or expulsion of projectile by anus. The plan of treatment advocated by M. Réclus is as follows: 1, energetic compression of the abdomen to check hemorrhage and fecal extravasation; 2, administration of large doses of opium; 3, only when the above-mentioned precautions fail is laparotomy justified.

More light must be thrown upon some very important omissions in these statements of M. Réclus before he can have good ground for expecting the English and American surgeons to accept his views. Suppose we accept his

fifty cases of recovery without operative interference, though from the signs of perforation which he mentions as pathognomonic, we are by no means forced to accept them. Vomiting of blood and bloody stools may, according to Connor and other authorities, be the result of contusion. The remaining symptoms—escape of feces from the wound, and passage of the bullet per anum—are very rare, as among the seventy-four cases of Coley they were not present in a single instance. The diagnoses of M. Réclus cannot, therefore, be accepted as reliable, and his argument is further weakened by the fact that he does not state what proportion of the total number of cases investigated by him, his fifty recoveries constitute.

The tables of Dr. Coley show much industry in the work of collating, and are arranged in convenient form.

HYSTERECTOMY AFTER HERNIOTOMY.

In the records of abdominal surgery at the Massachusetts General Hospital, reported by DR. H. GAGE (*Boston Med. and Surg. Journal*, Nov. 15, 1888), the following interesting case which occurred in the service of Dr. J. C. Warren, is described: A single woman, thirty years old, had first noticed a tumor seven years ago in the lower left side of the abdomen. It had grown with especial rapidity during the past year, and with its growth there had developed an umbilical hernia as large as two fists. This had been irreducible for three months, but gave rise to no discomfort until three days ago, when she began to have frequent attacks of abdominal pain, with nausea and vomiting. There had been no movement of the bowels and no passage of flatus for forty-eight hours. The hernial protrusion was tense, tender, and moderately painful. The skin was generally reddened and acutely inflamed at the summit, where there was a dry black slough as large as a fifty-cent piece. It was tympanitic, with a doubtful impulse, gurgling on pressure. The abdomen was enlarged to the size of pregnancy at term, and was tympanitic, except on the left side, where there was a large dull area in the hypogastric, inguinal, and lumbar regions. These were occupied by a slightly movable tumor of distinct outline.

The symptoms of strangulation continuing, the hernial sac was opened, and found to consist of four pouches separated by thick, fibrous walls, each communicating with the other through a small opening. Two of these pouches contained three to four ounces each of dark serum, while the two on the left of the median line contained a loop of intestine, three inches long, dark colored, and lustreless, with no omentum. At the middle of this loop was a constriction so tight that the calibre of the bowel was diminished one-half. The muscular and mucous coats were cut and had retracted, leaving a white, glistening ring around the bowel one-quarter of an inch wide. The contents of the bowel could, however, be readily passed through without leaking. After enlarging the opening the intestine was replaced and the wound closed tightly by a double row of braced sutures.

The patient had several large loose dejections on the third day, and improved steadily until the ninth day, when she had a chill with severe abdominal pain, nausea, and vomiting. During the next two weeks she had six chills at irregular intervals, all associated with the same evidences of

abdominal distress. The pain and tenderness were referred chiefly to the region of the tumor. This tumor had grown very slowly without causing any local or constitutional disturbance. It was hard when first examined, easily movable, and intimately connected with the uterus. Vaginal examination threw no light on its origin. After the operation on the hernia it seemed to grow softer, and over the lower part of the anterior surface distinctly fluctuating.

That the abdominal symptoms could be in anywise referable to the previous strangulation of the bowel seemed unlikely, in view of the absence of constipation and the free passage of flatus. The possibilities of a pyelitis from pressure, of a suppurating cyst of the ovary, and of a sloughing fibroid of the uterus, were all directly suggested, with the chances rather in favor of the latter condition. At all events, it was evident that she was failing rapidly as the result of some inflammatory change within or about the tumor, and Dr. Warren, after consultation, decided upon its immediate removal.

With the greatest difficulty the mass was delivered through a median incision, reaching from above the umbilicus almost to the symphysis. It was found to occupy the entire left side of the abdomen, and to extend above the lower margin of the ribs. It was mainly solid, very friable, and presented on section the appearance of a fibro-myoma. In several places, notably on the anterior surface, it had undergone cystic degeneration, and the resulting cavities were filled with a thick purulent fluid in which were floating bits of sloughing tissue. On the left side were to be seen the left broad ligament with ovary and tube. No trace of these structures could be found on the right. The body of the uterus was completely lost in the tumor. A Koeberle's écraseur was adjusted as low down as possible, and the mass cut off even with the abdominal walls. A glass drainage tube was placed in the posterior cul-de-sac, the stumps dressed with iodoform gauze, and the wound closed about it. The patient improved slightly during the first forty-eight hours, but died on the fifth day.

CALCULOUS DISEASE OF BOTH KIDNEYS.

MR. F. A. SOUTHAM reports (*The Medical Chronicle*, November, 1888) the case of a patient, aged 23, who presented a smooth rounded swelling over the right renal region, very perceptible both anteriorly and posteriorly. He had a history of renal colic, and had passed calculi *per urethram*. The swelling was painful and tender; the urine contained pus. Nothing abnormal could be observed in the left lumbar region. Nephrotomy was performed, and a large renal abscess evacuated and drained, but no stone was found. The patient died in two weeks with uræmic coma. At the autopsy the right kidney was found to be a mere multilocular sac: a small calculus was im-

its pelvis was dilated, and contained five calculi weighing altogether five and a half ounces.

Mr. Southam thinks that the case illustrates the following points: 1. Both kidneys may be the seat of calculi. 2. When both kidneys are thus affected, the symptoms of stone may all be referred to one kidney. Although a number of large calculi were found at the autopsy in the left kidney, the patient never complained of any pain or tenderness on pressure in the left

renal region, and there were no symptoms present during life indicating that the kidney on this side was the seat of calculous disease. 3. A calculus may easily escape detection on exploration of the kidney, when the latter is converted into a large irregular abscess-cavity. This is very liable to happen if the calculus is situated just within the orifice of the ureter, and especially if it is coated over with a layer of lymph and soft phosphatic deposit. In the present instance, even after the kidney had been laid open at the autopsy, it was on this account difficult to distinguish the calculus, either on touching it with the finger or striking it with a sound, from the rough indurated walls of the dilated pelvis. 4. When a calculus is situated at the orifice of the ureter, very serious effects may be produced, viz., retention of urine and pus, causing dilatation of the pelvis and calices, with absorption of the renal structure (pyo- and hydro-nephrosis); the result is that the kidney becomes converted into an irregular sac, giving rise to the presence of tumor, which may be perceptible both in the loin and also through the anterior abdominal wall. 5. When the obstruction to the escape of urine and pus, caused by the calculus, is not complete, the tumor may vary in size, being prominent at one time and scarcely distinguishable at another, *i. e.*, it may be intermitting. 6. When both kidneys are seriously disorganized, so that their functions are impaired, an operation upon one, even though relieving the condition which called for it, may be speedily followed by a fatal result from the supervention of uræmia.

THE SURGICAL IMPORTANCE OF STRICTURES OF LARGE CALIBRE.

DR. J. WILLIAM WHITE (*Annales des Maladies des Organes Génito-Urinaires*, November, 1888), after reviewing the diagnostic methods in use in cases of suspected stricture, and considering the rationale of the various symptoms associated with such conditions, details some cases of genito-urinary disturbances, gleet, impotence, vesical irritability, etc., in which a very slight increase in the size of the instrument used for dilatation brought about seemingly disproportionate beneficial results. He thinks that, although such cases are rare, in obstinate vesical troubles of the above character, especially when other means have failed, the surgeon should always try full and complete dilatation, an increase of only one millimetre in the circumference of the dilating instrument being sometimes productive of unexpected benefit.

FRACTURE OF THE HEAD OF THE HUMERUS DUE TO MUSCULAR ACTION.

M. AUGUSTE POLLOSSON reports (*Revue de Chirurgie*, November 10, 1888) the result of his examination of two specimens taken from the body of an epileptic who died during a convulsion, and who had suffered no traumatism of any description. The upper articulating extremity of the humerus on each side presented lesions which, seen externally, were absolutely alike and symmetrically situated. These lesions consisted in a forcing in of the cartilaginous part of the humeral heads. The depression was found over the anterior part of the head near the border of the cartilage, immediately above the lesser trochanter; it had the appearance of a groove from two and a half to three centimetres long, and from five to six millimetres deep. The cartilage was bent toward the hollow of this groove and presented near the deepest part a fissured line of fracture. A perpendicular section at the seat of the

depression showed similar appearances. The laminæ of compact tissue beneath the cartilage presented the same curve and the same fracture. The lamellæ of the spongy tissue were broken and the spaces were infiltrated with black blood, evidently proceeding from an interosseous hemorrhage, and not from a congestive or inflammatory state. The lesions were similar on both sides. On the left humerus, beneath the inferior or lower edge of the groove, there was found a movable bony fragment of about a centimetre in diameter, surrounded with a bloody effusion. The bones were not diseased nor preternaturally brittle. The absence of traumatism, the symmetry of the lesions, and the evidences of hemorrhagic infiltration of all the shoulder muscles evidencing a spasm of great violence, were sufficient to explain the occurrence of this very rare accident.

FRACTURES OF THE EPICONDYLES.

MM. CHARCOT and FRAUCHET detail (*Archives de médecine et de Pharmacie Militaires*, November, 1888) two cases of injury to the elbow diagnosticated as fractures of the epicondyles, and think they are justified in reaching the following conclusions:

1. Fracture of the epicondyles, although denied by Malgaigne, nevertheless exists. It is as yet only considered a pathological rarity, but this is because the attention of clinicians has not been sufficiently drawn toward this complication of fracture of the elbow.

2. The diagnosis of this epiphyseal fracture is most difficult during the first days following the accident, on account of the swelling of the part, the large extravasation of blood which surrounds the elbow, and the acuteness of the pains caused by palpation. It might be mistaken for a violent separation of the coronoid apophyses, or a hematoma of the bend of the elbow, or a fracture of the external tuberosity of the humerus.

3. The prognosis is serious; the fracture of the epicondyles helps to render the luxation of the elbow irreducible, and the torn or separated epiphysis may, in consequence of the contraction of the adhesions, singularly interfere with the movements of rotation of the head of the radius.

DOUBLE LUXATION OF THE CLAVICLE.

DR. C. KAUFMANN reports the following case (*Deutsche Zeitschrift für Chirurgie*, 28 Band, 1888). In an accident to a post-chaise the postilion fell from the box upon his left shoulder. He was seen soon after and presented the following symptoms: The head was carried slightly to the left, and the shoulder on that side appeared to have fallen inward, downward, and forward. The infra- and supra-clavicular fossæ were much more marked than normal. The arm lay against the body and was supported by the right hand of the patient. Elevation and abduction were possible within a range of thirty degrees. Over the manubrium one could see and feel the characteristic prominence of the articulating end of the left clavicle. The finger recognized easily the form of the articulating extremity and the abrupt prominence caused by it. The two heads of the sterno-cleido-mastoid were closely approximated. The appearances at the acromial end were equally characteristic. The articulating extremity was very prominent, projected upward, outward, and back-

ward, and could be outlined easily with the finger. The preternatural mobility was very striking. By drawing upon the left shoulder in a direction backward, upward, and outward, the acromial end slipped readily into place and the sternal end could be made to assume its proper position with very slight pressure. Upon relaxing the extension, however, the deformity immediately reappeared. The examination gave the patient but little discomfort, although he complained of racking and tearing pains at both ends of the clavicle, even when undisturbed. He was dressed with an apparatus similar to that employed by Prof. Sayre for fracture of the clavicle. He wore this for four weeks and then resumed his work. Six months afterward the supra-acromial deformity had entirely vanished, but the prominence at the top of the sternum was still noticeable, as was also the approximation of the two heads of the sterno-cleido-mastoid. The use of the arm was perfect. Kaufmann reviews the recorded cases of this injury, which are seven in number exclusive of his own. In all of them great force was required to produce the accident, which, in several was associated with other injuries.

ARTHRECTOMY.

SENDER records (*Deutsche Zeitschrift für Chirurgie*, vol. xxvii., 1888) several cases of operation upon the knee-joint in which that articulation was preserved and motion restored by the careful dissection of all the diseased synovial, ligamentous, and cartilaginous tissues. When the bone was found diseased it was gouged or scraped. His patients were of various ages, and all recovered from the operation.

Like most other surgeons who practise arthrectomy, he prefers the straight lateral incision to the anterior curved one in those cases in which he expects to obtain motion. In a large class of cases of joint disease the operation is destined to supplant excision, and has already saved many joints which a few years ago would have been thought so hopelessly diseased that the only possible or justifiable operative procedure would be complete excision or amputation.

OTOLOGY.

UNDER THE CHARGE OF

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DEVELOPMENT OF THE AURICLE IN MAN AND IN MAMMALS.

GRADENIGO, of Padua (*Internat. Congress of Otology*, Brussels, Sept. 10-14, 1888), states that the auricle of man, and of superior mammals, is the result of the reunion, more or less complete, between two systems very different respecting their embryology and morphology. The first, formed by the *colliculi bronchiales externi* of Moldenhauer, are devoted to the formation of the

external auditory canal, and form by the union of their parts the *angular fossa* of His, the future concha.

The second system, which constitutes the pavilion proper, is composed of two elevations, to which the author gives the name of *hyoidal helix*, and the *mandibular helix*, the former being much more developed than the second. From the hyoidal helix the antihelix and the antitragus are formed, while the tragus is formed from the mandibular helix. The lobule appears very late in the human embryo by the production of a prolongation of the hyoidal helix.—*Annales des Maladies de l'Oreille*, etc., October, 1888.

POLYOTIA.

HARTMAN, of Berlin (*Internat. Congress of Otolology*, Brussels, September 10-14, 1888), described at the Congress two cases of polyotia, and showed the photograph of a child who had, in front of the right auricle, a small mass resembling atrophied auricles. In this young patient there were other anomalies of development, as very marked asymmetry of the right side of the face, caused by atrophy of the superior and inferior maxillæ, and a congenital fistula near the nose. These anomalies may be attended by normal hearing.

A CASE OF CARCINOMA OF THE EAR, HAVING ITS ORIGIN PROBABLY IN THE TYMPANUM OR MASTOID ANTRUM.

DR. GORHAM BACON and DR. A. T. MUZZY, of New York, have reported an account of a case with the above-named features (*Archives of Otolology*, vol. xvii., 1888).

The patient, a woman, fifty-six years old, stated that she had first noticed deafness in her right ear a year previous to consulting Dr. Muzzy. About six months later she observed a slight watery discharge coming from the ear, which had continued, and finally a swelling was observed in front of the ear; the pain, which had been occasional, now became constant, and facial paralysis supervened, and brought the patient to seek aid one year from the initial deafness, as stated above.

Examination revealed induration and swelling of the walls of the auditory canal, but no view of the membrana tympani. Passing a probe inward caused no pain, but considerable hemorrhage from the meatus. Three months later, in November 1887, she could hear loud voices in the affected ear (the right), and the tuning-fork, vibrating on the vertex, was heard best in the diseased ear. The tissues over the mastoid were indurated, and firm pressure over the mastoid apex caused deep-seated pain.

A Wilde's incision over the mastoid revealed denuded bone, and an irregular opening about one-fourth of an inch in diameter leading to the mastoid cells. There were found no sequestra of bone nor any pus.

Six weeks later, in December, it was decided to open the mastoid cavity. An incision was made half an inch behind the pinna, extending from the "upper border of the pinna to the lower extremity of the lobule." The tissues divided were as dense as cartilage. "The mastoid was found extensively diseased, containing loose sequestra of bone and soft tissue." These sequestra and the spongy tissue were removed, and the cavity scraped with a

sharp spoon. A portion of the dense tissue from over the mastoid proved to be cancerous, and of "the fibrous or scirrhus variety."

The note made five days later stated that "the induration about the ear has increased, until at present it extends upward two inches, and forward toward the orbit two and a half inches; also behind the auricle two inches, and downward, just below the angle of the jaw, where there is some enlargement of the glands." Note of February 22d, two months later, shows that the patient remained in bed constantly after the operation, with great pain in the upper temporal region and vertex. "The pinna became greatly swollen and of a black color." A large swelling appeared below the ear, on the neck. Dysphagia, hemiplegia of right side, affected speech, and delirium supervened. Yet the patient lived until March 24th, a month longer, having suffered greatly from nausea and vomiting.

ON THE ACTION OF PHENIC GLYCERINE IN HYPERÆMIA OF THE TYMPANIC CAVITY.

MORPURGO, of Trieste (*International Congress of Otolology*, Brussels, Sept. 10-14, 1888), recalled a communication on this subject made by B. Hewson, at the Basle Congress, on the action of phenic glycerine in hyperæmia of the tympanum. Morpurgo stated that for fifteen months he had employed this drug with marked success. In nearly all cases complaining of pain, and presenting signs of hyperæmia of the middle ear, the instillation, every two hours, of a ten per cent. solution of phenic acid (carbolic acid) in glycerine, rapidly arrested the pain, and prevented suppuration and perforation of the membrana. Ménière and Delstanche also praised the action of this solution, even recommending, in some cases, the use of equal parts of phenic acid and glycerine.—*Annales des Maladies de l'Oreille*, etc., October, 1888.

PATHOLOGY OF THE MIDDLE EAR.

POLITZER, of Vienna (*Internat. Congress of Otolology*, Brussels, Sept. 10-14, 1888), read a paper upon this subject. It was accompanied by a number of plates, diagrams, microscopic sections, and anatomical specimens, illustrative of alterations of the oval window and the round window. Attention was drawn to the different axes necessary in making the sections for the microscope. In chronic catarrh, there occurs at first, on the oval window only, a hyperæmia, with some secretion. Later, the stapes ceases to vibrate, and finally adhesions form between the stapes and the niche of the oval window. Ankylosis of the stapes may also occur by the formation of thick and dense bands of fibrous tissue, or by true osseous tissue. In suppurative affections, the head of the stapes may be destroyed.

Politzer, furthermore, drew attention to the fact that in the newborn there are found in this region papillæ similar to those described by Gerlach as occurring on the inner surface of the membrana tympani. There may also be found in this region some fatty tissue. The author closed his paper by insisting upon the importance of pathological studies upon the region of the middle ear, as they alone can supply the basis of a rational and profitable therapeutics.—*Annales des Maladies de l'Oreille*, October, 1888.

WHAT CAN THE HUMAN EAR HEAR WITHOUT THE STAPES?

DR. E. BERTHOLD, of Königsberg, Prussia (*Archives of Otolology*, vol. xvii., Sept. 1888), gives an account of a woman, thirty-eight years old, who had been the subject of otorrhœa for years, and in whom he found a stapes detached from the oval window, and its base turned toward, and adherent to the imperforate membrana tympani. At first, ossification and adhesion of the membrana tympani were diagnosticated. Then it was determined to cut through the synchiæ between the promontory and the membrana. While performing this operation the operator hit upon what he considered a piece of loose bone; upon hooking this out, it proved to be the entire stapes.

The hearing of the operated ear seemed unchanged, in the physician's opinion, but the patient said she heard better. She could still hear loud words at a short distance. So long as the patient remained quiet, she did not complain of dizziness; on standing up, however, the right leg (the side of the affected ear) doubled up under her, as has been observed in doves with unilateral injury to the semicircular canals. The vertiginous symptoms became worse even when lying in bed that night. In twenty-four hours later, the vertigo was much less, and the patient walked a long distance to consult her physician.

Dr. Berthold found that temporarily the hearing improved by fitting a piece of vitelline membrane from an egg over the perforation.

The case is noteworthy in many respects: first, in the occurrence of such a peculiar lesion to the stapes, the other ossicles remaining in situ. Second, it is surprising that so much violent vertigo existed the first twenty-four hours, though very little, if any, labyrinth-fluid escaped. Third, the acuteness of hearing is worthy of note, as the general opinion has always been that complete deafness followed the loss of the stapes; but in this case, without a stapes, and with a co-existing perforation of the drum-membrane, loud speech was heard near the ear, and upon mechanical closure of the perforation with an artificial membrane, whispers could be heard fifteen feet.

The improvement in hearing in this case may have been due to vibrations communicated from the reinstated membrana tympani to the annulus tympanicus, and thence to the ossiculæ and the labyrinth, as suggested by Berthold in referring to some experiments of Johannes Müller upon vibrations of a membrane over a ring.

DISEASES OF THE EAR IN TYPHOID FEVER.

BÜKE, of Pesth (*Internat. Congress of Otolology*, Brussels, September 10-14, 1888), states that there occur epidemics of typhoid fever, in which affections of the ear amount to four or five per cent. Sometimes the ear is affected only through the nervous system, but this is transient. In other instances there occur veritable congestions of the middle ear, ending in suppuration. The treatment is the same as for any other form of otitis media.

DEAFNESS OF OLD AGE.

SAPOLINI, of Milan (*Internat. Congress of Otolology*, Brussels, Sept. 10-14, 1888), describes a method of his, which he states he has successfully employed

in sixty-two cases of deafness of old age. It consists in mopping the membrana tympani with a weak oleaginous solution of phosphorus. He claims that this treatment diminishes the opacity of the membrane, increases the circulation, and improves the hearing.

OPERATIVE TREATMENT OF ABSCESS OF THE BRAIN, CONSECUTIVE TO SUPPURATIVE OTITIS.

MR. THOMAS BARR, of Glasgow (*Internat. Congress of Otolology*, Brussels, September 10-14, 1888), read a paper on the above-named subject. He has had seven cases operated on by Macewen, with five cures. In one case, the child having died later of peritonitis, it was shown at the post-mortem examination that the pus cavity in the brain had healed. Mr. Barr said that heretofore these cases had been considered beyond the aid of surgical treatment, and he dwelt on the fact that the diagnosis is still difficult between abscess of the brain and phlebitis of the sinuses, and also the precise localization of the abscess is difficult. Stewart, in the discussion, said that the diagnosis could be made by the motor symptoms, but Politzer maintained that these symptoms are rare, while those of pain are predominant. — *Annales des Maladies de l'Oreille*, Oct. 1888.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF
J. SOLIS-COHEN, M.D.,
OF PHILADELPHIA.

PERITONSILLITIS FROM INTRANASAL AND INTRAMAXILLARY DISEASE.

ZIEM reports (*Monats. f. Ohr., etc.*, No. 9, 1888) two cases of peritonsillitis apparently originating in purulent intranasal disease, one of which was associated with similar disease of the antrum. Ziem refers to a number of articles published by him which show that an abscess of the antrum may break through its median, its outer, or its upper wall; that it may, through the medium of the vessels in the facial surface of the body of the bone, give rise to infiltration of the cheek, to facial erysipelas, to abscess of the lower eyelid, and to eczema and acne of the face; that extending along the roof of the cavity it may occasion infraorbital neuritis, iritis, panophthalmitis, and phlegmon of the orbital connective tissue. In like manner it may, by way of its posterior wall along the maxillary tuberosity, involve the retromaxillary soft tissues. When, he continues, it is remembered that the cephalopharyngeus muscle, external to the tonsil, springs with several fasciculi from the maxillary tuberosity and from the pterygomaxillary ligament, it can be comprehended how under certain conditions a suppuration in the antrum may lead to a peritonsillitis as in the instance detailed. He believes that this exposition is not without

practical significance in the treatment of recurrent peritonsillitis. He believes that in like manner suppuration may then extend along the cephalo- and laryngo-pharyngeal muscles and give rise to perichondritis of the larynx.

PRIMITIVE TUBERCULOUS LARYNGEAL NEOPLASM.

DR. KARL DEHIO (*St. Petersb. med. Woch.*, No. 16, 1888, *Rev. Mens. de lar.*, October, 1888) reports an instance in a man, forty-one years of age, in good health, without any symptoms of tuberculosis or syphilis. A gray bosselated tumor occupied nearly the whole surface of the left ventricular band, concealing the vocal band as far as the posterior vocal process, and was continuous without line of demarcation with the red and swollen mucous membrane of the ventricular band. Under the impression that the tumor was malign, it was extirpated by laryngotomy. Under microscopic examination it was found to be composed of miliary tubercles, with bacilli. The patient died seven weeks later under symptoms of pulmonary tuberculosis; but an autopsy was not permitted. The tumor had been removed several days after the operation.

The author concludes: 1. That primitive tuberculous tumors of the larynx may exist a long time without undergoing calcification; 2. That their ablation is dangerous, because the germs of infections hitherto inclosed in the tumor, penetrate the organism through the wound and produce secondary infections of the lungs; 3. That if removal be determined on, the electric cautery should be used in preference to the bistoury.

LARYNGEAL RHEUMATISM.

DR. A. LARANZA (*Rev. gén. de clin. et de ther.*, June 21, 1888) considers that the larynx being a complex anatomical structure, and located between the pharynx and the bronchi, both of which are susceptible of inflammation, separately or simultaneously, during the course of an acute articular rheumatism, is not likely to be spared by the rheumatic diathesis. Although Chomel indicated that grave laryngopathies take origin in acute articular rheumatism, the first important observation in proof dates from the inaugural thesis of Desbrousses in 1861, since which time, except a few isolated facts by Liebermann, Fauvel, Coupard, and Joal, nothing appeared in France on the subject up to the inaugural thesis of Archambault, chief of Fauvel's clinic, on the acute laryngeal manifestations of rheumatism, Paris, 1886.

Laranza has not discovered a single reported clinical example of rheumatism of the laryngeal muscles. He reports the case of a physician, æt. twenty-seven, with aphonia of rheumatismal origin. Moure found general hyperæmia of the larynx with impairment in the action of the thyroarytenoid muscles due to the inflammation of their envelope of mucous membrane. The case resisted treatment for three months when, upon examination, the left vocal band was found, with concave margin, immovably fixed in the middle line. At this time it was decided to try sodium salicylate, under the influence of which the dysphonia disappeared completely in five days, and the voice regained almost its normal timbre. There was not the slightest articular or muscular pain, and the intrinsic muscles of the larynx were the only ones affected by the rheumatism.

LARYNGEAL VERTIGO.

ED. WEILL (*Prov. méd.*, Dec. 3, 1887; *Rev. men. de laryn.* Oct. 1888) reports a case in a male æt. forty-five, vigorous, obese, alcoholic, without hereditary antecedents. Eight years before, he had frequent attacks of asthma for the first time. During the last six years the paroxysms have become separated at longer intervals, and emphysematous bronchitis is present. Nothing peculiar in the lungs nor in the urine.

At each attack of asthma, in addition to a continuous oppression which lasts for several days, there is a paroxysmal spasmodic cough of from ten to sixty minutes duration, repeated several times a day. This cough is preceded by tickling sensations in the throat, and is sometimes accompanied by sensations of asphyxia. Sometimes the laryngeal titillation provokes several succussions of cough, and then very soon, under the habitual dread of asphyxia, the head falls on the breast, and consciousness is lost for about two seconds. As the head is raised, the right upper extremity becomes agitated by clonic movements for several seconds, during which time there is a sound as of a cascade in the right ear; both manifestations subsiding simultaneously. The attacks of vertigo are always produced under the asthmatic influence, and the losses of consciousness occur in the non-asphyxious paroxysms.

 FRACTURE OF THE LARYNX.

LANDGRAF (*Friedreich's Blätter f. ger. med.*, xxxix., 1888. *Semon's Centralbl. für Laryng.*, Nov. 1888) reports an instance in a man, æt. thirty-eight, who received a blow from behind, and who, in falling, struck his neck against the corner of a table. Death occurred in three days. There was a horizontal fracture of both thyroid cartilages, with separation of their anterior commissure. The interior of the larynx was the subject of several sugillations.

BARENDT (*Lancet*, March 3, 1888. *Idem*) reports a case from a blow from the elbow of a playmate at football. Great emphysema. Crepitation and pain on palpation of the thyroid gland. Puncture to release the imprisoned air, with relief to dyspnoea. Subsequently laryngotomy became necessary, during the performance of which the left wing of the thyroid cartilage was found broken, but not separated from its fellow. Death on thirteenth day from pneumonia.

 PARTIAL EXTIRPATION OF THE LARYNX.

MAX SCHEIER criticises (*Deutsch. med. Woch.*, No. 43, Oct. 25, 1888) Sir Morell Mackenzie's recent table and compares it with the table he presented in No. 23 of the same journal. Scheier reported two cases of death within fourteen days; three between the third and sixth week; five in which the operation succeeded but in which recurrence took place; eight recoveries in which the time of observation was very short; and five cases of recovery in cases more than eighteen months under observation. He claims that Mackenzie has duplicated four cases by recording them under the names both of operator and reporter, under different dates of operation; and states that he has been unable to find the references elsewhere to eight more unsuccessful cases in Mackenzie's table; he also points out some additional inaccuracies. He con-

cludes that the *résumé* of his own table shows that nine per cent. died from the operation; thirteen and one-half per cent. died during the after-treatment; recurrence took place in twenty-one and one-half per cent.; and, finally, that recovery ensued in fifty-six and one-half per cent., from which thirty-five per cent. must be subtracted on account of too early publication. In the instances of recurrence, life was prolonged for various periods, in one instance sixteen months, before the recurrence took place.

THYROTOMY FOR MULTIPLE PAPILLOMA OF LONG STANDING.

DR. JULIUS SOMMERBRODT reports (*Berl. klin. Woch.*, Oct. 15, 1888) a case of hoarseness of twenty-eight years duration, with dyspnoea of five years' standing, and due to multiple papilloma, in which complete cure, with restoration of voice, was secured by evulsion after incising the larynx. The laryngoscopic appearances being such as to indicate that thorough eradication was apparently unpracticable by intralaryngeal procedure, tracheotomy was performed, the cricothyroid ligament divided, the trachea tamponed, the larynx divided upon a probe-pointed director, the papillomas removed with scissors and sharp spoons, and the points of attachment energetically cauterized with the electric cautery. The bleeding was not inconsiderable. The tracheal canula was removed on the fifth day, and the patient discharged on the eleventh. Twenty-six months after operation the voice remains excellent, and the general condition entirely satisfactory.

RESULTS OF THYROTOMY.

HOFFA, in studying (*Berliner klin. Woch.*, Oct. 22, 1888) Brun's tables of thyrotomies since 1878, finds that of ninety-four operations, only four terminated fatally; one by pyæmia, and one by diphtheria, both of which might have been avoided under efficient antiseptics; and two by hemorrhage into the lungs, in one of which the trachea was not tamponed at all, while the tampon-canula ruptured in the other.

The necrosis of cartilage, theoretically feared, did not occur in any instance.

Of sixty of these cases the voice remained normal in thirty-nine, became hoarse in fifteen, and aphonic in six.

EXTIRPATION OF THE THYROID GLAND.

DR. FRANK reports (*Berlin. klin. Woch.*, Oct. 8 and 15, 1888) the results of Hahn's operations, 1883-1887. Of the 19 operations, 9 were total extirpations. Of the 19 patients, 4 died from the effects of the operation; 1 out of 3 intraglandular operations; and 3 out of 9 total extirpations after Kocher's method; 7 unilateral Kocher operations resulting successfully. One total extirpation terminated fatally, after a few months, from complications. Considerable details are given concerning several of the cases, and a consecutive summary of the course in the entire nineteen cases completes the article.

Special reference is made as to the condition of the voice in connection with injury to the recurrent laryngeal nerve. In many cases an injury was unavoidable. In one instance complete unilateral paralysis of the vocal band ensued, but in the course of some nine months the other band became able to

fulfil the active function, so that the voice showed no trace of hoarseness. In one of the fatal cases it was found that the recurrent nerve had been partially included in a ligature, but without any influence on the unfortunate result. In another, atrophy of one recurrent nerve was found on autopsy. In a fourth, in which there was paresis of the right vocal band with hoarseness before operation, the paresis increased afterward. Slight alterations of voice were frequently observed, but they soon improved or passed off entirely.

NERVOUS COUGH.

DR. PAUL KOCH (*Annales des mal. de l'oreille*, etc., October, 1888) reports a peculiar typical case of nervous cough in a rapidly growing, sturdy lad eleven years of age. He had been coughing for about fifteen weeks, in consequence, as he believed, from having become chilled in a very cold corridor. The cough consisted of a series of short, resonant aspirations resembling the tones of a trumpet, monotonous in timbre, and with very regular intermittences; inspiration remaining normal. The cough was continuous and could not be arrested spontaneously. To restrain it the patient was instinctively led to place some hard substance, no matter what, into his mouth; and while this remained there the cough ceased. Sometimes the device failed. Sometimes the cough continued during sleep. When the patient was told to cough voluntarily his cough had the ordinary tone. Later he found himself able to keep the cough in arrest by continually pronouncing the syllable *ta* in a low tone. All remedial agents failed, and the lad seemed to comprehend our professional impotence in the presence of a neurosis. Six weeks' residence in a mountainous district eventually cured the malady.

In some general remarks upon nervous cough and on its differential diagnosis, Koch admits, with Charcot, the necessity of assuming some lesion or compression of the cough centre, while admitting the little scientific value of the expression. This centre has been located by vivisection at about two millimetres above the vital node toward the region of the base of the fourth ventricle. The central origin of nervous cough explains the inefficacy of medicaments which have more or less calming influence on ordinary cough.

ANTIPYRIN IN NASAL HEMORRHAGES AND IN INTRANASAL DISEASE.

The hemostatic properties of antipyrin reported by HÉNOQUE, in 1884, have been recently reaffirmed (*Arch. de Lar.*, etc., April, 1888). He considers that the drug produces a constriction of the vessels and of the tissues at the same time that it produces coagulation of the blood. Among the practical hemostatic applications indicated are hemostases of the nasal structures. In epistaxis the antipyrin may be used in powder, in solution, incorporated into gauze, or in ointment. It may be insufflated, and then be covered with wadding or other dressing. During the course of operations in the nose the parts can be bathed with a five per cent. solution. Cotton wadding can be sterilized and then dipped into a concentrated solution and allowed to dry. Hénocque thinks there is antiseptic action in addition to the hemostatic, and perhaps even an action favorable to cicatrization.

HINKEL (*N. Y. Med. Journ.*, Oct. 20, 1888) reports only questionable suc-

cess from weak solutions of antipyrin in several cases of trifling bleeding following operations in the nose; but in later experience with four per-cent. solution found decided hemostatic effect, though not superior to that of cocaine. He finds that it possesses to a certain extent similar retractive effect on the turbinated tissue to that of cocaine. Sixteen grains to the ounce of water with a few minims of glycerine was as strong as could be readily borne, and was sufficient for the purpose. He noticed no blanching and no anæsthesia; but noted a sedative action utilizable in certain cases of sneezing, lachrymation, etc., in coryza, and in hay fever. Antipyrin presented an advantage over cocaine in avoiding numbness and dryness of the parts and over-stimulation of the nervous system. It causes considerable smarting, and is unequal to the relief of severe inflammation or extreme occlusion of the nares. Combined with cocaine it increases the topical action of the latter, so that cocaine can be used in a weaker solution, say from one-half to one-fourth per cent. solution.

OBSTETRICS.

UNDER THE CHARGE OF

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DISPLACEMENTS OF THE UTERUS THE CAUSE OF THE SEVERE VOMITING OF PREGNANCY.

GRAILEY HEWITT (*Medical Press*, p. 409, 1888) reports over fifty cases in which pronounced displacements of the uterus existed, causing severe vomiting of pregnancy. In 11 cases the uterus was retroverted and impacted; in 30, anteфлекed (in 17 of these, impaction was present); in 12, the uterus was anteфлекed with indurated cervix; and in 6 it was fixed in the pelvis. When these displacements were corrected cure followed; 11 patients aborted, 3 died.

THE TREATMENT OF INCARCERATION OF THE RETROFLEXED PREGNANT UTERUS.

COHNSTEIN (*Archiv für Gynäkologie*, Band 33, Heft 1) has treated five severe cases of incarceration of the pregnant uterus successfully as follows: The emptying of the bladder is absolutely necessary; this may often be accomplished by using a male silver catheter. When the cervix is impacted behind the pubes, the posterior lip should be seized and drawn downward and backward; when this is inaccessible, the anterior vaginal wall should be gently drawn down by successive efforts until the cervix is dislodged.

When the bladder is emptied without difficulty, one hand should press the cervix backward by downward pressure behind the symphysis, while the other raises the fundus *per vaginam*; when it has been necessary to draw the

cervix downward by an instrument, traction downward and backward at the same time will facilitate the reposition of the uterus.

ŒDEMA PULMONUM; INDUCED LABOR; RECOVERY.

BRAUN (of Krakau) has successfully induced labor in a case of pulmonary œdema by the use of Carl Braun's colpeurynters. Five applications in two hours were made under careful antiseptic precautions. Labor was completed by podalic version, and recovery followed. The pulmonary œdema resulted from nephritis.—*Centralblatt für Gynäkologie*; No. 41, 1888.

PUNCTURE OF THE UTERUS THROUGH THE ABDOMINAL WALL FOR HYDRAMNIOS.

LEPAGE (*Annales de Gynécologie*, October, 1888) reports a case of twin pregnancy, in which diagnosis was impossible by reason of hydramnios. Pinard punctured the uterus through the abdominal wall with a trocar, and evacuated eight quarts of fluid, pale yellow; alkaline; specific gravity 1007; containing urea, glucose, chlorides, epithelial remains, and fat globules. A diagnosis was then made, twin pregnancy with hydramnios of one foetus. The twins were stillborn shortly afterward, and macerated. The mother was not in the least inconvenienced or endangered by the procedure, and Lepage urges that it is an innocuous and justifiable means of diagnosis when the abdomen is so distended that diagnosis is otherwise impossible.

A CASE OF OBLIQUELY CONTRACTED PELVIS FOLLOWING DISLOCATION OF THE RIGHT HIP-JOINT.

GUSTAV BRAUN (*Wiener klinische Wochenschrift*, No. 27, 1888) reports the case of a woman who had suffered dislocation of the right hip in childhood; it was unreduced, and in consequence the pelvis was contracted in the right oblique diameter; the diagonal conjugate was 3.9 inches. There were ante-flexion of the uterus and hydramnios. The uterus was bandaged in proper position, and combined version was made, with the extraction of a living child. Mother and child recovered without incident. It is interesting to note that the vertebral column was without deformity.

THROMBUS OF THE ANTERIOR LIP OF THE CERVIX UTERI.

AUVARD also reports (*Ibid*) a case of the above which formed an obstruction to delivery and delayed labor. The patient had no hemorrhage during pregnancy or labor. On examining the membranes and placenta it was found that the placenta had been inserted in the lower uterine segment, a fact which had a probable bearing on the occurrence of the thrombus. The membranes were unusually capacious.

THE INTRODUCTION OF THE HAND IN VERSION.

LOVIOT (*Bulletins de la Société Obstétricale de Paris*, No. 8, 1888) urges the manœuvre described by Lachapelle, to introduce either hand for version. Rup-

ture the membranes, and should the presenting part of the fœtus not occupy a position corresponding to the hand (left or right), allow the hand to remain, but extend it toward the probable situation of the feet, in pronation or supination, as most convenient, grasping them as soon as possible.

CHARPENTIER believed it made no difference which hand is chosen; when the feet are in front it may be necessary to put the patient in a genu-pectoral position.

PAJOT regarded the choice of hands as immaterial when the trunk presented; in other cases it has practical bearing. He follows Dubois's rule: introduce the hand to the fundus immediately, then grasp the feet; they will be readily obtained. The lateral position of the mother is often very advantageous.

THE TREATMENT OF RETENTION OF MEMBRANES OR PLACENTA.

MARTINI (*Münchener med. Wochenschrift*, Nos. 39 and 40, 1888) reports the results in 80 cases of retention of membranes or placenta, occurring in 2960 births, or 2.7 per cent. of all. Analysis of these cases justifies the following conclusions: Retained membranes and placenta failed to influence puerperal temperature in 61 (76.3 per cent.) cases. In 18 cases (22.5 per cent.) it could not be positively asserted that retention did not influence temperature; in 5 cases fever was distinctly traceable to this source; it did not exceed 103.5° F., and was accompanied by foul lochia. The cause of the decomposition of the membranes and lochia was in 2 cases maceration of the fœtus, and in 2 others abortion. It was noticed that when the lochia became foul, puerperal ulcers also appeared; the cause of both phenomena was thought to be a common septic agent.

While the simple retention of membranes had little or no effect upon the puerperal period, maceration of the fœtus greatly increased the occurrence of fever. Fetid lochia were present in 31.3 per cent. of cases; hemorrhage in about the same proportion; in 18 per cent. it occurred some time after delivery. Retained membranes and placenta had little influence on the involution of the uterus. Expulsion of membranes generally occurred on the third or fourth day, spontaneously. Eight cases were treated by intrauterine manipulation, 1 died from the entrance of air into the uterine veins; 4 had fever, 1 was afebrile; the result of interference was such that Martini does not advise it. He recommends non-interference, and expects the spontaneous expulsion of retained tissues in four days after labor. When the lochia decompose he advises vaginal douches of antiseptics. Ergot, antipyretics, and baths are to be employed as the indications arise.

DOUBLE BAG OF WATERS IN TWIN PREGNANCY.

AUVARD (*Archives de Tocologie*, No. 9, 1888) reports a case of twin pregnancy in which a double bag of waters presenting was a valuable diagnostic sign. He adds six similar cases in recent obstetric literature.

THE EFFECTS OF COMPRESSION OF THE FŒTAL SKULL.

MURRAY (*Edinburgh Medical Journal*, November, 1888) has compressed the fœtal head by the cephalotribe, observing that the following phenomena

resulted: the foetal skull is compressible in an antero-posterior diameter by the sliding of the occipital and frontal bones under the parietal; this compression is not accompanied by an appreciable increase in the transverse diameters. Compensation occurs by vertical elongation of the skull providing for the accommodation of the cranial contents. Practically, moderate compression of the head, with axis-traction, results in accommodation of the head after this manner. In slightly contracted pelves Murray thinks that axis-traction forceps, with compression as described, affords a rational means of completing delivery.

THE MOST RECENT DATA REGARDING THE MODERN CÆSAREAN SECTION.

CARUSO (*Archiv für Gynäkologie*, Band 33, Heft 2) reports a case in detail by Sänger and one by Zweifel, and adds the statistics up to October 1, 1888, comprising 135 cases: 6 successful cases in addition are known to Caruso, but the details necessary for publication were lacking.

German operators have performed 74 of these operations: Americans 18, Austrians 16; the results obtained by Americans are inferior to those of the Germans and Austrians. The results are $74\frac{44}{100}$ per cent. of recoveries among mothers, in all cases, and $91\frac{73}{100}$ per cent. recoveries among children; in three cases in which the operation was done a second time, both mothers and children recovered. It may, therefore, be said that a mother has three chances out of four, and her child nine out of ten for life with this operation.

A careful estimate of the results of craniotomy, under antiseptic precautions, shows that $93\frac{4}{100}$ per cent. of the mothers recover. Selecting similar cases on which section was performed, the percentage of recoveries in these cases was $89\frac{4}{100}$, and 100 per cent. of the children. Caruso concludes, therefore, that craniotomy on the living child is to be superseded by the conservative operation. In comparison with induced labor the foetal mortality, 39 per cent. in favorable cases, decides in favor of Cæsarean section.

In deciding upon the operation the following points must be considered:

1. The consent of the mother and relatives, it being distinctly understood that her danger is greater than in embryotomy.
2. The patient's strength must not have been exhausted; the patient must be free from infection.
3. Foetal heart-sounds must be strong and regular.
4. Strict antisepsis, competent assistants, and a full understanding of the operation by operator and assistants must obtain.

From the study of the subject, Caruso believes that the elastic ligature about the cervix favors hemorrhage; manual compression is safest.

A SUCCESSFUL PORRO OPERATION FOR MULTIPLE MYOMATA.

MIXTER (*Boston Medical and Surgical Journal*, November 8, 1888) reports the case of a primipara, aged thirty-eight, whose labor was complicated by the presence of large myomata of the uterus. On opening the abdomen a large tumor was seen extending upward from the uterus and adherent to omentum and intestines; a second tumor, with the uterus, filled the pelvis. The wire of an écraseur was placed about the cervix; the uterus was incised

and a large child delivered; the uterus was then amputated at the cervix and the mass removed, the cautery being used to sever the ovaries and adhesions. The broad ligaments were tied separately; the stump transfixed by a long pin, and left at the lower angle of the abdominal wound. The only troublesome hemorrhage was from a rent in the periuterine tissue, which was controlled by pressure. Mother and child recovered perfectly, the puerperal period being normal.

CÆSAREAN SECTION FOR HYPERTROPHIC ELONGATION OF THE CERVIX UTERI.

COLEMAN (*American Journal of Obstetrics*, November, 1888) reports a case of procidentia of the cervix, which protruded from the labia three inches, with great abdominal distention, which was diagnosticated extrauterine pregnancy. Cæsarean section was performed, when the pregnancy was found to be intrauterine, the complication being excessive hypertrophic elongation of the cervix. A living child was extracted. The mother died between four and five days afterward from sepsis. Post-mortem examination revealed the cervix six and a half inches in length.

AN UNUSUAL CASE OF EXTRAUTERINE PREGNANCY.

MORISANI, at the last meeting of the Italian Obstetrical Society (*La Riforma Medica*), reported a case of extrauterine pregnancy in which rupture of the sac and escape of its contents into the abdomen occurred; this was followed by symptoms of the passage of a body *per rectum*, and Morisani removed *per anum* a five months fœtus recently dead and without a cord. The placenta was not found, and the cord was thought to have ruptured when the fœtus lodged in Douglas's cul-de-sac.

RUPTURED TUBAL PREGNANCY, WITH HÆMATOCELE; LAPAROTOMY; RECOVERY.

HOLLSTEIN (*Deutsche med. Wochenschrift*, No. 39, 1888) reports a case of tubal pregnancy at about six weeks, in which rupture and hæmatocele occurred. The patient was admitted to a hospital, and palliative treatment employed. As the hæmatocele increased, and the patient's strength failed, laparotomy was performed. The tube and sac were extirpated, and a large collection of blood removed; the ovum was as large as a hen's egg; hemorrhage ceased entirely when the tube was removed. Recovery followed, although the sac of the hæmatocele suppurated, and required drainage.

Hollstein does not believe in immediate laparotomy for rupture of the sac. Spontaneous checking of the hemorrhage may result through the formation of an hæmatoma in the broad ligament; an hæmatocele with adhesions; or through syncope. When the effused blood increases, and prostration and profound anæmia are present, laparotomy should be done.

PREGNANCY IN A RUDIMENTARY UTERINE CORNU; LAPAROTOMY, AMPUTATION OF CORNU; RECOVERY.

ROSTHORN (*Wiener klinische Wochenschrift*, Nos. 27 and 28, 1888) reports the case of a primigravida aged twenty-three years, in whom menstruation

had ceased for fourteen months, then returning scantily. An abdominal tumor developed, extending at first to the right hypochondrium, then filling the abdomen to the umbilicus. The general health of the patient remained undisturbed.

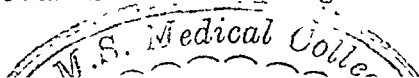
On examination, the uterus was normal in form, but slightly longer than usual. The tumor was connected with the right cornu of the uterus, filling the right perimetrium. A provisional diagnosis of cyst of the right ovary, or fibro-cyst of the uterus, was made. Laparotomy revealed a tumor resembling ovarian cyst, containing a chocolate-colored fluid, with shreds of necrosed tissue. The tumor was extensively adherent to neighboring parts; the adhesions were separated, and the pedicle was found to be the right uterine cornu. The uterine artery was ligated, resection of a portion of the uterine tissue at the pedicle was made, and the tumor removed. An elastic ligature, as in Cæsarean section, was placed about the uterus before removal of the tumor, to prevent hemorrhage. The broad ligament was sutured, and a tampon of iodoform-gauze inserted at the lower angle of the wound. The patient made a good recovery. No other abnormality was detected on examination. The skeleton and débris of a decomposed fœtus of eight months were found in the sac.

Rosthorn calls attention to the remarkable freedom from symptoms, severe or mild, displayed by the patient during this pregnancy; the usual symptoms of pregnancy were wanting. Diagnosis is difficult, ovarian cyst is generally suspected. These cases usually rupture at four or six months, fatally. Operation should be made early; if the child is living, Porro's operation may be done; if not, amputation of the cornu, the stump treated by intra-peritoneal suture. Breisky's and other recent successes strongly urge the removal of the entire sac.

[Compare Eastman's and Meyer's cases in this JOURNAL, 1888, pp. 545, 546. Rosthorn's paper contains a detailed anatomical description of this rare case, with bibliography.—ED.]

THE TREATMENT OF EXTRA-UTERINE PREGNANCY.

Those who advocate the total extirpation of fœtus and appendages in extra-uterine pregnancy, will find increased support for this view in a case reported by ZAJAITSKY (*Centralblatt für Gynäkologie*, No. 40, 1888), of Moscow, who states that his was the first Russian operation of its kind. The patient was a primagravida, aged thirty-three, who gave a history of the signs of early pregnancy, followed by hemorrhage from the genitalia and pain; a small tumor had developed over the pelvic brim. Pain continued and fever supervened. Laparotomy revealed ruptured tubal pregnancy of the right side, the fœtus and appendages lying in the broad ligament. The broad ligament was incised, and dark, purulent fluid removed. The edges of the cyst were grasped by forceps, the fœtus removed with a portion of the placenta. The internal spermatic artery of that side was ligated; the broad ligament incised anteriorly and posteriorly and the sac removed. The edges of the broad ligament were sutured with catgut and iodoform was applied freely; no drainage was employed. The fœtus was six months advanced. Uninterrupted recovery followed. It is interesting to note that no serious hemorrhage occurred, although the placenta was incised.



WIBORGH (*Lira*, No. 8, 1888) reports a case of tubal pregnancy three months advanced, in which laparotomy was performed at the moment of rupture. The fœtus was removed, and the tube ligated with catgut. Hemorrhage ceased; recovery resulted.

IVERSEN (*Gynækol. og. obstetr. Meddel.*, Copenhagen, Bd. 7, Hefte 1, 2) reports a case of tubo-abdominal pregnancy at four months, in which laparotomy was performed and the placenta left behind, the sac being tamponed. The patient died in collapse. He also reports a case at three months, in which extirpation was done in two operations. Hæmatocele formed where the sac had been; this was emptied and treated by tamponing with iodoform gauze; prolonged convalescence and recovery resulted.

TWELVE CASES OF EXTRA-UTERINE PREGNANCY.

WINCKEL (*Münchener medicinische Wochenschrift*, No. 38, 1888), from the clinical observation of twelve cases, has formed the following beliefs regarding the diagnosis and treatment of extra-uterine pregnancy: During the first four months the cessation of menstruation, changes in the breasts, in the nipples, and in the secretions of the breast; bluish color about the vagina and pulsation of bloodvessels in the vagina; changes in the uterus and the growth of a tumor near the uterus, with a uterine souffle over the tumor, are grounds for a presumptive diagnosis. An infallible sign is the escape of the decidua; this occurred, however, in but 6.5 per cent. of Cohnheim's 600 cases; as this sign was present in but two-thirds of Winckel's cases, from the third to the fifth month, this escape of decidua may be overlooked or may not occur until the end of pregnancy. A diagnosis should be based on the collection of symptoms, there being no other condition exhibiting them all.

Winckel prefers the injection of morphia $\frac{1}{2}$ of a grain in solution as the treatment of extra-uterine pregnancy in the early months. He makes the injection through the abdominal wall into the sac if possible, and but once; he does not aspirate the amniotic fluid.

THE USE OF BICHLORIDE OF MERCURY AT THE CHARITÉ MATERNITY (BERLIN).

SOMMER (*Charité-Annalen*, xiii. Jahrg.) reports the results of the use of bichloride of mercury in 5027 births. The strength of the solution employed has been lessened from 1 to 1000 to 1 to 4000 for injection. 19 cases of mercurial intoxication occurred, with 1 death: of these, 1 resulted from vaginal douches before and after labor; 4 from vaginal douches during the puerperal period; 4 from washing out the uterus after labor, and 10 from repeated intra-uterine douches, in the puerperium. It will be observed that intra-uterine douches are most dangerous.

The lowest septic mortality before the use of bichloride was 5 per cent.; during its use, from 0.17 to 0.34 per cent.

Sommer believes that 1 to 5000 is the best solution for injections; for intra-uterine douches 3 to 5 per cent. carbolic acid should be used, and bichloride 1 to 1000 for disinfecting the hands.

THE TREATMENT OF PUERPERAL SEPTICÆMIA.

RUNGE (*Archiv für Gynäkologie*, Band 33, Heft 1) has continued to employ his method of treating puerperal septicæmia by the free use of alcoholics, forced feeding, tepid baths, and the omission of antipyretic drugs. His cases amounted to 20, with 15 recoveries; of the 5 fatal cases, 4 died from vomiting, which could not be controlled. Runge observed that the use of the bath was followed by a gain in appetite and often by a period of sleep. The alcoholics given were the heavy wines and cognac, one patient averaging half a bottle of port and five ounces of cognac daily for twelve days.

Symptoms of intoxication rarely appeared, and were considered favorable signs, as indicating a lessening of the activity of the septic process. Hyperpyrexia was treated by baths and alcoholics only.

THE GERM OF PUERPERAL SEPTICÆMIA.

CZERNIĘWSKI, of St. Petersburg (*Ibid.*), concludes, from extensive experiments upon the germ of puerperal septicæmia, that microörganisms are rarely found in the uterus, and that pathogenic bacteria are not present in the lochia of healthy puerperæ. In mild, and also severe septic infection the streptococcus is the active agent; this germ may cause abscess or phlegmon in suitable media. In the living organism the streptococci produce parenchymatous degeneration of organs, and hyperæmia of serous membranes, with exudates.

THE TREATMENT OF PUERPERAL ECLAMPSIA.

VEIT (*Sammlung klin. Vorträge*, No. 304, 1888), after using other methods of treatment, has been led to rely on morphia, in large doses, given hypodermatically, in eclampsia. His first dose is usually $\frac{3}{4}$ th grain, followed by half as much when required. It is generally necessary to give from $1\frac{1}{4}$ th to 3 grains in from four to seven hours; the drug is to be pushed to the production of narcosis. For the renal complications of eclampsia hot baths, followed by packs, are best; pilocarpine favors pulmonary œdema.

THE FACTORS INFLUENCING FŒTAL DEVELOPMENT.

LA TORRE (*Nouvelles Archives d'Obstétrique et de Gynécologie*, Nos. 7, 8, and 9, 1888) reaches the following conclusions from an extensive study of the causes influencing fœtal development: The sex and degree of development of the fœtus depend very largely upon the health and development of the father. Multiparity has much less influence than the condition of the father. Alcoholism, tuberculosis, and syphilis check fœtal development.

THE PATHOLOGY AND TREATMENT OF INTRA-UTERINE DEATH.

SIMPSON (*British Medical Journal*, October 20, 1888) regards the fœtal causes of intra-uterine death as zymotic diseases or pyrexia; syphilis or some other chronic affection; and accidents, from direct violence or the cord tightly coiled about the neck. The maternal causes are zymotic diseases, acute diseases profoundly affecting the organism, and displacements and inflammations of the uterus. The placental causes of intra-uterine death

are most frequent and important, and the affections of the placenta most commonly affecting foetal life are neoplastic, as myxoma and nutritional changes in the vessels, parenchyma and epithelial investment, usually caused by syphilis. The maternal portion of the placenta may undergo inflammatory, hypertrophic, and degenerative changes. Apoplexies of the placenta, often accompanying nephritis, are another cause of intra-uterine death. Diagnosis is made by observing changes in the foetal heart beats, tenderness in the uterine walls, or faintness. Treatment should be addressed to the father when syphilis exists. Anæmia in the mother requires iron; chronic inflammation of the uterus is improved by applications to the endometrium. Potassium chlorate, 15 to 20 grains every six or eight hours, may be given as an alternative and tonic. A final resource is the induction of labor, by means of the hot douche or bougie.

BARNES considers syphilis, endometritis, and displacements as the most frequent causes of intra-uterine death; he combines iron and potassium chlorate, and begins their administration early in pregnancy.

FŒTAL INFECTION THROUGH THE PLACENTA.

BIRCH-HIRSCHFELD (*Munchener medicinische Wochenschrift*, No. 42, 1888) reports experiments upon animals to determine the possibility of the conveyance of infection to the foetus through the placenta. In the greater number of animals experimented on, infection of the foetus resulted, the germ of anthrax being employed as an infective agent. The maternal portion of the placenta contained abundant spores, while the foetal division of the placenta showed but few. Bacilli passed through the degenerated epithelia of the foetal villi and the sub-epithelial capillaries. In rabbits the germs were exceedingly abundant. He considered the process one of permeation, similar to that seen when anthrax invades the lung.

VIRCHOW regarded hemorrhage and embolism as accompaniments of the infective process.

ANTISEPSIS IN THE HYGIENE OF THE NEWBORN.

EPSTEIN (*Prager medicinische Wochenschrift*, No. 42, 1888) regards the umbilicus as the most frequent seat of septic infection in the newborn, through the vessels of the cord. Septic inflammation at the umbilicus may be superficial, or it may extend deeply; the diagnosis of the latter condition is not easily made during life, as the symptoms are those of constitutional infection. The danger of infection is greatest soon after birth. Less frequently the mouth is the focus of septic infection. Aspiration of septic matter from the vagina results in pneumonia. Neglected stomatitis from septic causes may result in general infection; pleuro-pneumonia, pleuritis, and purulent meningitis may develop; also purulent otitis media. Any lesion caused by violence at birth may become a focus for foetal infection.

Epstein has tried various directly antiseptic methods of treating the cord and umbilicus by occlusion dressings. He has observed irritation and inflammation with them all. The umbilical cord exposed freely to the air of a room for five days mummifies without odor. Everything which prevents free access of air to the cord is prejudicial. It is best to strip the cord, powder

it lightly with salicylic acid and starch, and allow it to dry and fall off. Should an ulcerating surface remain, it may be powdered with iodoform. Strict precautions should be taken, however, to secure perfect aseptic cleanliness in all which touches the child. The nurse should especially guard against conveying infection from mother to child. Winckel's suggestion that mother and child be cared for by separate nurses is a good one.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,
OF NEW YORK.

UTERO-VESICAL FISTULA.

F. NEUGEBAUER (*Archiv für Gynäkologic*, Bd. xxxiii. Heft 2) shows by a study of twenty cases from his father's practice, and one hundred and forty collected from literature, that this lesion is of more frequent occurrence than has been supposed, since it is frequently overlooked during the puerperium, and, moreover, tends to heal spontaneously. It is not unusual for the patient to pass her water in the ordinary way, only a small portion of the urine escaping through the fistula.

CATGUT SUTURES IN EMMET'S OPERATION.

MEINERT (*Ibid.*) prefers catgut in repairing lacerations of the cervix, not only because he believes that parametritis may be caused by forcibly withdrawing silver sutures after healing in cases of deep laceration, but because when the perineum is repaired at the same time its integrity is not impaired during the removal of sutures from the cervix. He supports the catgut by a plate suture, which passes through the middle of both lips, each end being secured by a perforated shot; it assures primary union and prevents secondary hemorrhage. It is even possible to use a continuous catgut suture when the plates are employed.

A NEW OPERATION FOR PROLAPSUS UTERI.

FIRING (*Ibid.*) describes an operation which has been performed for several years by Frank. It consists in completely separating the posterior vaginal wall from the rectum as high up as the fornix, and then folding up the redundant portion by means of buried catgut sutures. There is thus formed a large projection on the posterior wall, "like a living tampon." The wound in the perineal body is then repaired in the usual manner.

Frank regards the success of the operation as dependent not so much upon the formation of a vaginal fold, and the narrowing of that canal, as upon the attachment of the vagina in a new position as a result of granulation and cicatrization of the external wound. He prefers to repair the perineum three

weeks after the primary operation. Patients who were treated by this method have been examined seven years after operation, and showed no evidences of recurrence. One woman, with complete prolapsus, has borne four children since the operation without having any return of the displacement.

THE FREQUENCY AND TREATMENT OF MALIGNANT TUMORS OF THE OVARY.

FREUND (*Ibid.*) calls attention to the fact that the formation of metastases in connection with neoplasms of the ovary does not necessarily contra-indicate operative interference. He reports ten cases in which all the patients were in fair condition at an average of a year after the removal of the tumor. He arrives at the following conclusions:

1. Hydrothorax is a frequent complication of malignant neoplasms and requires no special treatment.
2. True metastases, with rich vascular supply, are to be distinguished from the small secondary growths that are commonly found scattered over the pelvic peritoneum.
3. Laparotomy, with careful attention to antisepsis, is preferable to puncture in cases of carcinoma of the peritoneum with ascites, the result not differing from that of the same operation in chronic and tuberculous peritonitis.
4. The removal of even a portion of the growth is followed by good effects.

DILATATION OF THE CERVIX IN CASES OF HEMORRHAGE DUE TO FIBRO-MYOMATA.

KALTENBACH (*Centralblatt für Gynäkologie*, November 10, 1888) observed that in three cases in which he dilated the cervix for the purpose of removing a supposed intra-uterine polypus the hemorrhage was checked by the dilatation alone, the benefit being marked for several months. The severe colicky pains that preceded the hemorrhages were likewise cured.

The writer assumes that stenosis of the os is sometimes associated with intramural fibroid. The blood, being unable to escape from the canal, collects within the uterine cavity, not only causing expulsive pains, but distending the mucous lining, thus keeping up prolonged irritation and continuing the flow. When the canal is dilated the blood can escape freely without causing pain, the uterus contracts, and the hemorrhage ceases. This simple procedure will be most successful in cases in which the tumor is small and the patient is near the menopause.

THE TREATMENT OF RETROFLEXION.

SCHAUTA (*Prager med. Wochenschrift*, 1888, No. 29) thinks that puerperal peritonitis is one of the most common causes of this condition. The principal symptoms are pressure on the rectum, vesical irritation, and hemorrhage. Hemorrhage (which may take the form of either menorrhagia or metrorrhagia) is due to venous obstruction from torsion of the broad ligaments.

Fixation of the retroflexed uterus is recognized by its entire or partial immobility. When the adhesions are not too firm they may be separated by pressure, or by Schultze's method. When they are firm and broad, Brandt's massage should be tried; in less severe cases from five to eight *séances* will

be sufficient. By elevating the uterus in this way the sacro-uterine ligaments recover their tone, so as to retain the organ in its normal position. A suitable pessary may afford aid at this stage.

In exceptional cases, in which the uterus has been freed, but cannot be retained in position, the fundus must be fixed, by shortening the round ligaments, or by hysterorrhaphy. The writer has performed the latter operation four times.

THE VALUE OF CATHETERIZATION OF THE URETERS IN CASES OF URO-GENITAL FISTULA.

JACOB (*Nouvelles Archives d'Obstétrique et de Gynécologie*, October 25, 1888) reports several cases of fistula, from a study of which he arrives at the following conclusions:

1. If the ureters are intact, we may at once proceed to close most fistulæ with a certainty of success.

2. If the opening of the ureter is at the edge of the fistula it will be difficult to close the latter. In this case the writer, before attempting to operate on the fistula, would follow Bozeman's plan of stretching the cicatricial tissue in the vagina by making longitudinal incisions, and introducing rubber dilators. He suggests the introduction of a catheter into the ureteric opening, leaving it *in situ* while the wound is healing.

3. If the ureter is situated in the midst of the cicatricial tissue around the fistula its exact location must be made out before operation, as otherwise it might be included in the sutures, when acute hydronephrosis will result.

4. The introduction of a sound into the ureter is highly important in cases in which the ureter has been completely divided. It has been suggested by Landau to pass a fine catheter through an opening in the vagina into the distal end of the ureter, to insert the other extremity of the same into the vesical end of the duct, and thus to carry it into the bladder and out through the urethra; the ends of the divided ureter are then sutured, with the instrument *in situ*. Or, the ureter may be turned into the vagina; this failing, nephrectomy should be performed.

STATISTICS OF VAGINAL HYSTERECTOMY.

SECHEYRON (*Ibid.*), in an article in favor of this operation, calls attention to the steady decrease in the death-rate, Péan having operated sixteen times between January and September of the present year, without losing a patient. The writer has collected 105 cases, operated upon by French surgeons, with a mortality of 23.80 per cent., and 394 by foreign surgeons, with a mortality of 15.47 per cent. The former report a recurrence of the disease within six months in 8.75 per cent., the latter, a recurrence of 1.80 per cent. in the same time; 3.75 per cent. in the one case, and 10.48 per cent. in the other, had no recurrence at the end of two years. These statistics are only of relative value, but they exhibit no more discrepancies than do those of any other operation for the removal of malignant disease, such as amputation of the breast.

The writer calls attention to the fact that many unsuitable cases have been operated upon. Vaginal extirpation should be limited to cases in which the disease is absolutely confined to the cervix or corpus uteri, otherwise the operation is to be regarded simply as a palliative, and not as a curative measure.

TRENDELENBURG'S POSTURE IN GYNECOLOGICAL EXAMINATIONS.

MENDES DE LEON, in a recent number of the *Centralblatt für Gynäkologie*, describes how he adopted the plan suggested by Trendelenburg in cases of epicystotomy, in order to reach deeply-seated and adherent ovaries, which he was endeavoring to remove by laparotomy. The pelvis was elevated by bending the legs of the patient over the shoulders of two assistants, who stood with their backs toward the foot of the table. The ovaries were easily reached, as the intestines gravitated out of the pelvic cavity.

The writer suggests that this method is also applicable to ordinary gynecological examinations, when it is difficult to practise the bimanual on account of tympanites. The patient is placed on a lounge, with her head toward its foot, and her feet hanging over its back. In this position it is claimed that the pelvic viscera can be palpated with much greater ease than is possible by the ordinary method.

ILEUS FOLLOWING VAGINAL HYSTERECTOMY.

REICHEL (*Zeitschrift für Geb. und Gynäkologie*, Band xv. Heft 1) reports two cases of this complication. In the first the patient had tympanites on the third day after the operation, but no vomiting. The bowels could not be moved. An examination of the wound revealed no local cause for the symptoms. On the seventh day the stomach was washed out; the washings contained fecal matter. Laparotomy was performed on the same day, and a coil of intestine, including the lower part of the ileum, was found to be adherent to the edge of the wound and was detached. The patient died of shock.

In the second case there were no complications until the fifth day, but the bowels had not moved. On the eighth day there was fecal vomiting, and feces were removed by the stomach-tube. The abdomen was opened on the ninth day and an adherent loop of small intestine was separated from the edge of the wound. Death occurred on the twentieth day from general peritonitis.

In view of the possibility of intestinal adhesions occurring, the writer asks if it is not advisable to close the peritoneal wound. It has been stated that prolapse of the gut never occurs after vaginal hysterectomy, but there are four authentic cases on record. In order to lessen the danger from a large raw surface, some operators are accustomed to stitch the peritoneum to the vaginal mucous membrane. With regard to the treatment of ileus by lavage of the stomach it should be said that, while it does not overcome the obstruction, it certainly relieves the tympanites and puts the patient in better condition for a subsequent laparotomy.

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PELVIC MEASUREMENTS AND THEIR IMPORTANCE IN
OBSTETRIC PRACTICE.

BY HOWELL T. PERSHING, M.Sc., M.D.,
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THE recent revival of the Cæsarean section will doubtless prove to be a great benefit to American obstetrics, even outside of the domain of the operation itself.

The one thing that the advocates of the improved operation most earnestly insist upon is, that it be deliberately chosen beforehand, and that no attempt be made to deliver in any other way. But the choice of so dangerous an operation implies the knowledge of an obstacle to delivery so formidable as to preclude a reasonable hope that any less radical procedure will be successful.

Now it is well known that in an overwhelming majority of all such cases the obstacle to delivery is some deformity of the pelvis, and that in every case of labor complicated by pelvic deformity it is necessary to consider with due care the nature and amount of the contraction before deciding upon any method of delivery, whether it be by induction of premature labor, the unaided powers of the patient at term, forceps, turning, embryotomy, gastro-elytrotomy, or Cæsarean section. So, when the advocates of the last-named operation insist upon its deliberate and exclusive choice in all suitable cases, they practically demand a careful examination of the pelvis of every pregnant woman before labor begins or as soon afterward as possible. For in no other way can the conditions which may make the operation necessary be excluded. As a matter of fact, skilful obstetricians have attended women in confinement, with no apprehension of the case being an unusual one, have tried the forceps, turning, and craniotomy in succession, and after the death of the

patient have regretted that Cæsarean section was not resorted to in the beginning.

Without any special search for such cases I have recently found accounts of three¹ on the pages of a single journal.

No doubt, many similar ones could be found. But for every one of these desperate cases of contracted pelvis there are many in which more conservative measures, such as the use of the forceps or turning, would suffice. That they are often overlooked is apparent from the number of reported cases of difficult labor in which the phenomena are such as would most likely be caused by a deformity of the pelvis, but in which no such examination has been made as would lead to its recognition. If interest in Cæsarean section causes these less dangerous, but far more frequent, cases of dystocia to be more thoroughly studied, that, in itself, will be a great gain. It cannot be doubted that in them a correct or even approximately correct knowledge of the pelvis would often lead to the adoption of better methods of treatment. The only question is, How is such knowledge to be obtained?

In order to form an independent opinion as to the value of such measurements as can be taken during life, I have recently made careful measurements of ninety dried female pelvises, found in the various museums of Philadelphia. In this number are included twenty plaster casts in the collection of the College of Physicians. They were made by Tramond, of Paris, and careful study of them has satisfied me that they are faithful reproductions of the real pelvises.

The ninety cases may be classified as follows:²

Normal	12
Justo-major	3
Generally contracted	13
Flat	10
Flat, generally contracted	16
Flat and oblique	2
Pseudo-osteomalacic	7
Oblique	6
Kyphotic ³	3
Transverse contraction, brim and outlet	10
Transverse contraction of outlet	6
Infantile	1
Pelvis obiecta	1

¹ I. E. Taylor: Equally Faulty or Contracted Pelvis, *American Journal of Obstetrics*, August, 1883.

J. L. Dawson, Jr.: Labor in a Justo-minor Pelvis, *American Journal of Obstetrics*, November, 1883.

H. C. Coc: Paper before Obstetrical Society of New York, *American Journal of Obstetrics*, April, 1888.

² It is not pretended that this classification is the best that might be made. The difficulty of properly placing transitional forms, especially in the slighter degrees of contraction, has been very perplexing.

³ These cases are called kyphotic because in all of them the conjugate is elongated, the transverse shortened at inlet and outlet, the brim made more nearly horizontal, and the sacrum more nearly vertical, all of these changes being apparently due to a marked kyphosis of the lumbar or dorso-lumbar column. The distance of the anterior superior iliac spines, however, is not increased as it is in the most typical kyphotic pelvis.

In the discussion of these cases, by *conjugata vera* or true conjugate is meant the shortest distance from the promontory to the symphysis pubis. In cases of double promontory it is measured from the one nearer the symphysis. This diameter is regarded as shortened unless it exceeds 10 cm. (3.94 inches).¹ My measurements have all been taken in the metric system on account of its greater convenience. The most important ones are also given in inches.

Pelvic measurements as made during life are external and internal. The only instrument needed is a pelvimeter, or pair of calipers with a scale to indicate the distance of the points from each other. In selecting one from the many that have been devised, accuracy of graduation, rigidity, lightness, compactness, and absence of a set screw are qualities to be sought. In default of a regular pelvimeter, a pair of machinist's calipers with a scale or tape measure can be made to serve, but it will be more troublesome.

THE EXTERNAL CONJUGATE.

The length of this diameter is ascertained by placing one point of the pelvimeter in the depression just below the spinous process of the last lumbar vertebra and the other upon the upper border of the symphysis pubis at whatever point gives the greatest distance. Moderately firm pressure is employed, and the distance read on the scale.

In thirty autopsies Litzmann² found the average excess of the external conjugate over the true conjugate to be 9.5 cm. (3.75 inches). Measured on the dried pelvis, the external conjugate is the distance from the extremity of the last lumbar spinous process to the tubercle of the os pubis close to the symphysis, and I have found it in seventy-four cases to average 7.8 cm. more than the true conjugate. Hence, in a typical normal pelvis, having a true conjugate of 11 cm., the external conjugate averages 20.5 cm. (8.07 inches) if taken during life, or 18.8 cm. if taken in the dried state. This makes the average thickness of the soft parts included during life 1.7 cm., which agrees precisely with the conclusion of Michaelis³ that 8 lines (1.69 cm.) comes nearest the true average.

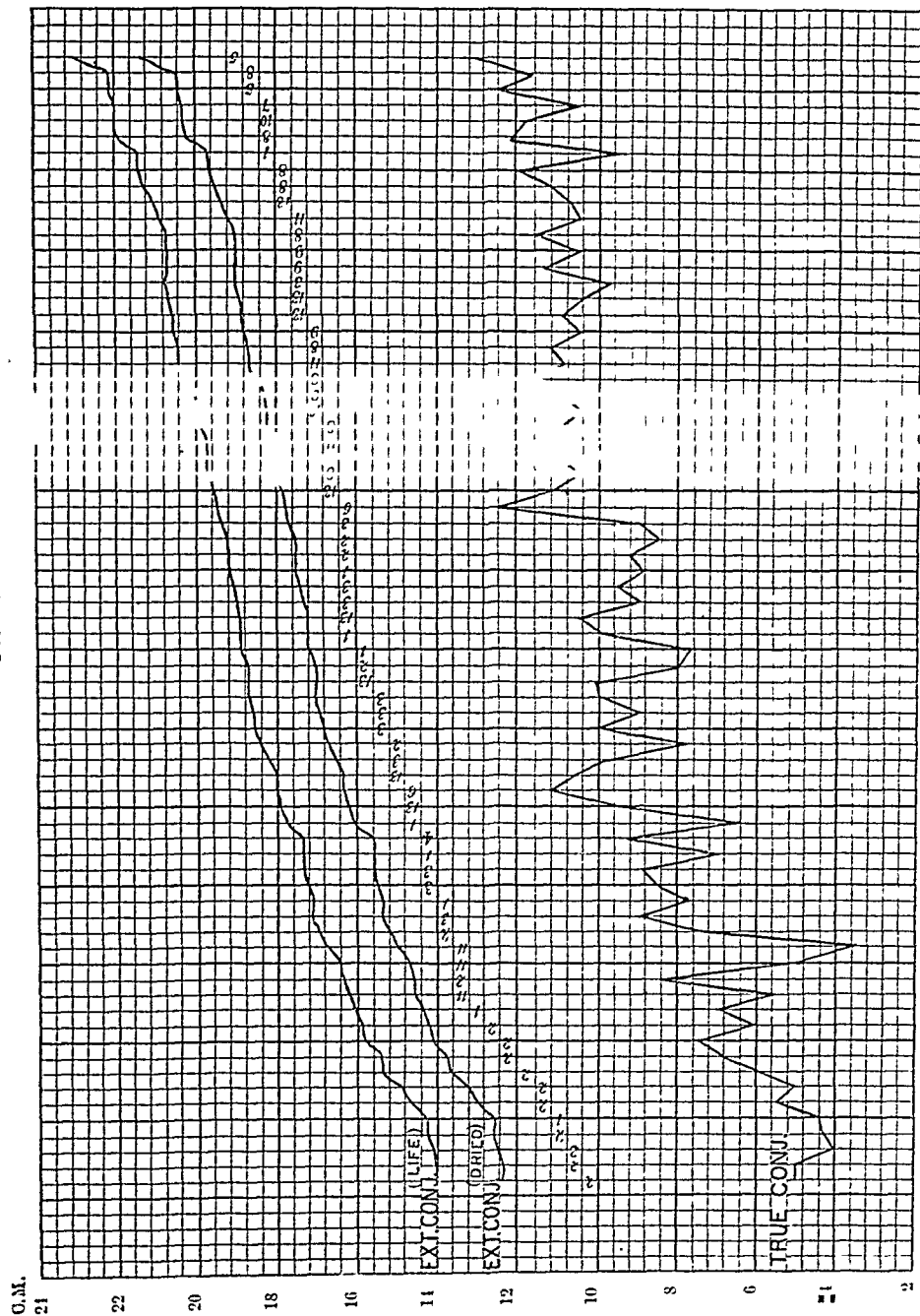
Baudelocque claimed that by subtracting 3 inches or 3½ inches from the external conjugate the true conjugate could be ascertained to a line. He was soon shown to be wrong both in taking too small an average amount to be subtracted, and especially in greatly under-estimating the range of the variation from this amount. Thus Litzmann, in the thirty autopsies already referred to, found the difference between the external and true conjugate to vary between 7 cm. and 12.5 cm. On this account,

¹ Spiegelberg : *Lehrbuch d. Geburtshülfe*, 2te Aufl., p. 391. Lusk : *Science and Art of Midwifery* 2d ed., p. 462.

² *Die Geburt bei engem Becken*, Leipzig, 1884, p. 26.

³ *Das enge Becken*, Leipzig, 1865, p. 89.

FIG. 1.



Relation of true conjugate to external conjugate.

- | | | |
|------------------------------|-----------------------------|---------------------------------------|
| 1. Flat. | 3. Justo-major. | 9. Oblique. |
| 2. Flat generally contracted | 6. Kyphotic. | 10. Pelvis oblique. |
| 3. Generally contracted. | 7. Nigolo's oblique. | 11. Pseudo-osteomalacic. |
| 4. Infantile. | 8. Normal. | 12. Roberts's transverse contraction. |
| | 13. Transverse contraction. | |

Baudelocque's diameter is sometimes spoken of as though it were useless. It still remains true, however, that by subtracting the correct average difference, an amount will be obtained which is more probably correct for the true conjugate than any other. Moreover, there is a certain proportion of cases in which this diameter will indicate with certainty that the pelvis is, or is not, contracted in the same direction.

Fig. 1 shows the relation between the conjugata externa and the conjugata vera in seventy-two dried pelvises, arranged in the order of the former diameter, each vertical line corresponding to a single specimen. In order to show the length of the external conjugate, as measured in life, it is assumed that the thickness of the included soft parts does not vary from the average. As a matter of fact, it does vary¹ from $\frac{1}{4}$ " to $1\frac{1}{4}$ " (0.6 cm. to 3.2 cm.), but any considerable variation could be detected on external examination, and allowed for with sufficient accuracy.

The following table shows the varying degree of probability that the true conjugate is not more than 10 cm. in a case whose external conjugate is given:

TABLE I.

External conjugate in life. ²	External conjugate dried pelvis.	No. of cases.	No. with conjugate 10 cm. or less.
22 cm. or more.	20.3 cm. or more.	5	0
21 " to 21.9 cm.	19.3 " to 20.2 cm.	5	1
20 " to 20.9 "	18.3 " to 19.2 "	12	1
19 " to 19.9 "	17.3 " to 18.2 "	13	7
18 " to 18.9 "	16.3 " to 17.2 "	12	6
Less than 18 "	Less than 16.3 "	25	25

The greatest external conjugate, in which shortening of the true conjugate occurs, is 21.5 cm. By looking at Fig. 1 the contraction in this case is seen to be very slight; and going backward no marked case of contraction is found until the conjugata externa is reduced to 19.7 cm., where a true conjugate of 9 cm. is found. Below this point contraction becomes much more frequent and more marked.

The shortest external conjugate in which the true conjugate is not diminished is 18 cm. This is in a case of the kyphotic type, having a conjugate of 11.2 cm., and in another pelvis whose conjugate is 10.6 cm., apparently, but not certainly of the same type.³

The results obtained from this group of seventy-four cases accord very well with the conclusions of Litzmann,⁴ which are as follows: When the external conjugate measures less than 16 cm. the pelvis is always nar-

¹ Michaelis, op. cit., p. 88.

² Estimated by adding 1.7 cm. to external conjugate of dried pelvis.

³ This pelvis was disconnected from the rest of the skeleton, so I could not be certain.

⁴ Die Geburt bei engem Becken, p. 26.

rowed in the same direction; when it is less than 19 cm. there is narrowing in more than half the cases; if it is from 19 cm. to 21.5 cm., narrowing scarcely occurs in one case out of ten; if it is more than 21.5 cm., contraction in this direction is not to be expected at all.

If I might be permitted to extend this statement by combining with it the results of my own cases, it would be as follows: If the external conjugate is less than 16 cm. ($6\frac{1}{2}$ "), shortening of the true conjugate is certain, and is likely to be very considerable; from 16 cm. to 18 cm. ($6\frac{1}{2}$ " to $7\frac{1}{8}$ ") shortening is extremely probable; from 18 cm. to 20 cm. ($7\frac{1}{8}$ " to $7\frac{7}{8}$ ") the chances are even; from 20 cm. to 21.5 cm. ($7\frac{7}{8}$ " to $8\frac{1}{2}$ ") shortening of the true conjugate is highly improbable, and, if it does occur, slight; above 21.5 cm. ($8\frac{1}{2}$ ") contraction in this direction may be safely excluded.

THE DISTANCE OF THE ILIAC SPINES AND ILIAC CRESTS.

We owe the use of these transverse diameters of the large pelvis in obstetric diagnosis to the genius of Michaelis. The distance of the anterior superior spines of the ilium is measured by adjusting the points of the pelvimeter to the spine of each side just outside of the tendon of the sartorius. Michaelis¹ recommends that they be moved downward a short distance, so as to grasp the tendons again, and that the reading be then taken.

The distance of the crests is obtained by applying the instrument to the two opposite points that are most widely separated, or, in case the crests approach each other, as they recede from the spines, points about two inches back of the latter should be taken. For these two measurements it is convenient to use the abbreviations *sp. il.* and *cr. il.*

Litzmann² found that in two hundred normal pelves measured during life *sp. il.* averaged 27.2 cm. and *cr. il.* 29.5 cm. The amounts to be subtracted in order to give the corresponding measures for the dried pelvis, he concluded to be 1.2 cm. and 0.9 cm., respectively. Michaelis,³ however, by measuring twelve pelves, both in the living and dried state, found the average difference to be 8''' for *sp. il.*, and 6''' for *cr. il.* From this we are justified in concluding that the true differences are nearly 1.5 cm. and 1 cm. Here, as in the case of the external conjugate, any unusual thickness or thinness of the integument can be noticed, and an allowance made.

The text-books of obstetrics sometimes give these two diameters as much smaller, probably because inside measurements are meant. Such measurements serve no good purpose, and as they confuse the subject, it seems as though they might well be discarded.

¹ Das enge Becken, p. 70.

² Die Geburt bei engem Becken, p. 27

³ Das enge Becken, p. 92.

Fig. 2 gives the conjugate and transverse diameters of the brim, together with sp. il. and cr. il. of ninety dried pelves arranged in the order of sp. il., each vertical line corresponding to a single specimen. That there is a relation between the transverse diameter and sp. il. is shown by the general rise of the line of the former, although it is very irregular, and is less rapid than that of the latter. In such a case we naturally expect the relation to be expressed approximately by a common ratio rather than by a common difference.

It is instructive to consider the cases in groups arranged in the same order.

TABLE II.

Sp. il. (dried pelvis).	Number of cases.	Average transverse.	Maximum transverse.	Minimum transverse.	Ratio of average transverse to sp. il. ¹
17 cm. to 19.5 cm.	8	10.4	11.5	8.8	0.517
20 " " 20.6 "	11	11.4	13.4	10.0	0.524
21 " " 21.5 "	12	11.7	12.5	11.0	0.516
22 " " 22.5 "	10	11.9	12.7	11.0	0.505
23 " " 23.8 "	13	12.6	13.2	12.0	0.504
24 " " 24.5 "	13	13.0	14.4	10.5	0.508
25 " " 25.7 "	10	13.0	13.8	11.4	0.487
26 " " 26.6 "	10	13.4	14.7	11.0	0.486
27	2	13.7	14.5	13.0	0.482

Here the average transverse diameter of the brim is seen to increase with tolerable regularity, but the striking irregularities in the columns containing the maximum and minimum seem to defy all attempts at computation. Still the attempt is not altogether fruitless. In the last column of the table it appears that the average ratio of the transverse diameter to sp. il., as measured during life, varies but little in the different groups, and that $\frac{1}{2}$ is a close approximation to it.

Now, taking each of these eighty-nine cases separately, adding 1.5 cm. to sp. il. to get the corresponding measurement during life, and assuming one-half of this to be the transverse diameter of the brim, I find the error to be less than 1 cm. ($\frac{2}{5}$ ") in seventy. In the remaining nineteen it is 1 cm. or more, and in two cases it exceeds 2 cm.

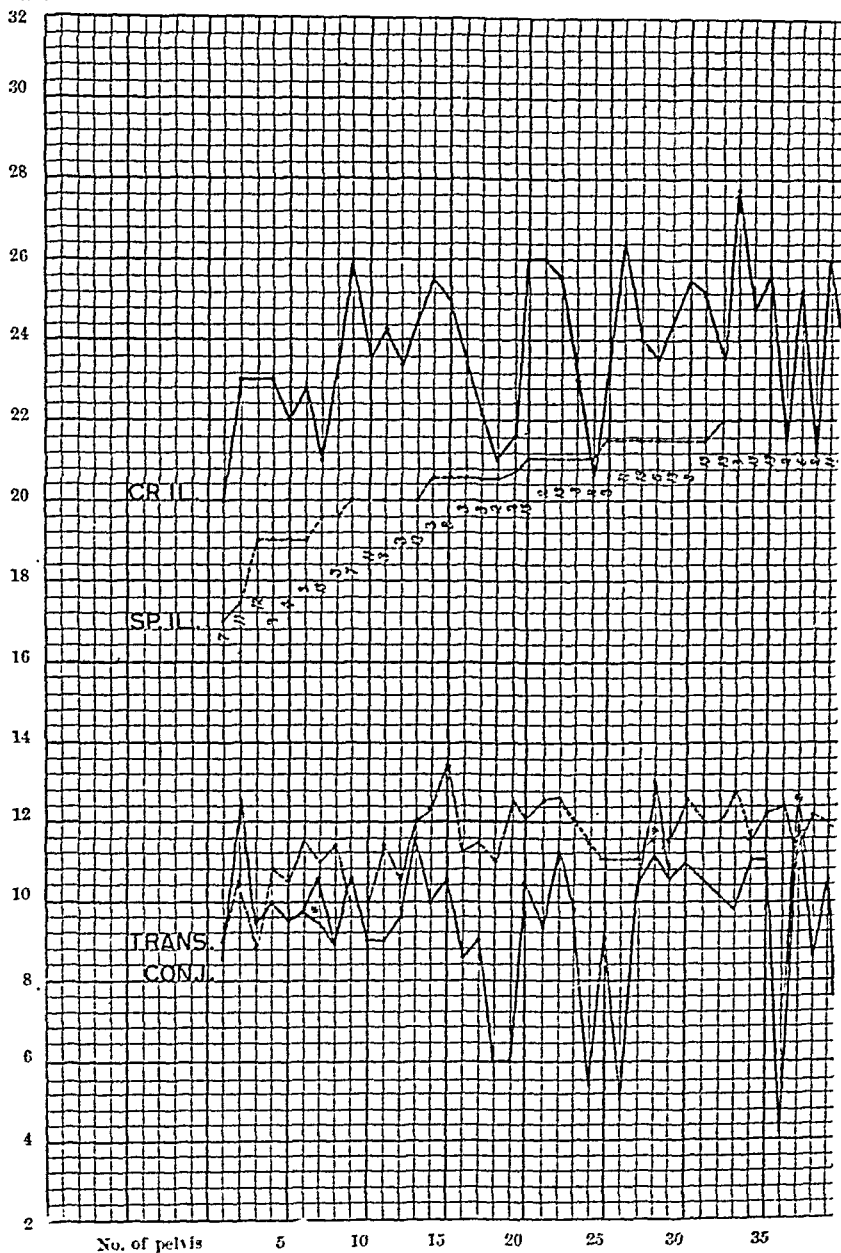
It must not be forgotten, in judging of this result, that these cases do not fairly represent the general run of deformed pelvises; because the slighter and less irregular forms of contraction do not commonly find their way into museums; so that, in actual practice, we may reasonably expect the proportion of gross errors to be smaller. But when they do occur, can they be detected and reduced in amount?

The factors capable of disturbing the usual ratio between the diameters in question are changes in the inclination, breadth, and thickness

¹ Sp. il. is here supposed to be taken during life, and to average 1.5 cm. more than in the dried pelvis.

FIG. 2.

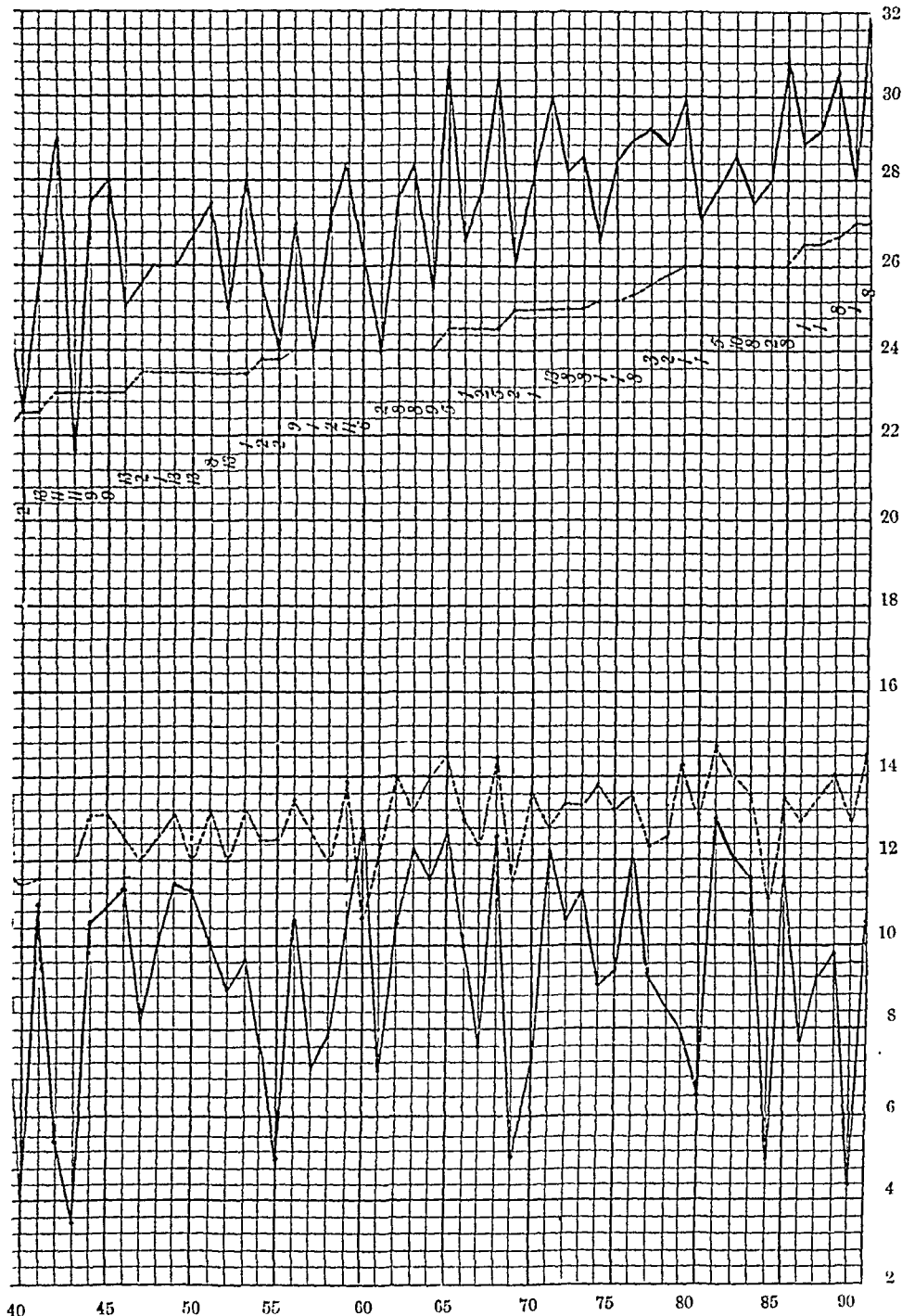
C.M.



Relation of conjugate and transverse to iliac diameters.

- 1 Flat.
- 2 Flat generally contracted.
- 3 Generally contracted.
- 4 Infantile.
- 5 Justo-major.
- 6 Kyphotic.

* Two conjugates, owing to double promontory.



7. Nägele's oblique.
8. Normal.
9. Oblique.
10. Pelvis obiecta.
11. Pseudo-osteomalacic.
12. Roberts's transverse contraction.
13. Transverse contraction.

of the spreading portions of the ilia, especially in the anterior part. The thickness of the bones at the edges can be estimated without special difficulty. Some idea as to whether the breadth and inclination are greater or less than normal may be obtained by external palpation, paying particular attention to the length and direction of the line joining the superior and inferior spines of each side. Combined external and internal palpation will be of more value. If the ilia are thicker, broader, and more nearly horizontal than usual, one-half of sp. il. will be greater than the transverse diameter, and 1 cm., 2 cm., or even 2.5 cm. should be subtracted. If the opposite conditions prevail, an addition should be made; but it will seldom need to be more than 1.5 cm. It may fairly be claimed that the distance of the iliac spines is of great value in estimating the transverse diameter if used with all due care.

There is also a relation between the two iliac diameters and the true conjugate, which, considering their difference in direction, is truly remarkable. Examining Fig. 2, it will be seen that there are fifteen cases in which the line of cr. il. is within 1.3 cm. ($\frac{1}{2}$ ") of that of sp. il. or actually falls below it. In every one of these cases the true conjugate is less than 10 cm. Hence it is plain that a very small or reversed difference between these two diameters is a strong indication of flattening.

The extent to which this is true is best shown in tabular form. Here, again, due allowance must be made for the fact that museum specimens are so largely pathological.

TABLE III.

Difference between sp. il. and cr. il.	Number of cases.	Number with conjugate of 10 cm. or less.		
-1.5 cm. to 0 cm.	7	7	=	100 per cent.
0 " " 0.9 "	2	2	=	100 "
1 " " 1.9 "	12	9	=	75 "
2 " " 2.9 "	16	8	=	50 "
3 " " 3.9 "	24	12	=	50 "
4 " " 4.9 "	15	5	=	33 "
5 " " 6 "	14	5	=	35 "

Here, it appears that with increase of the difference in question the liability to flattening decreases, but it is also plain that no amount of this difference excludes flattening. Litzmann¹ thinks the explanation to consist in the fact that in rachitic children, the bones being soft, the pressure of inflated intestines pushes the expansions of the ilia apart in front and makes them more nearly horizontal, while the downward thrust on the sacrum brings the posterior ends of the ilia nearer together, and spreads their anterior ends further apart, at the same time that the promontory is brought nearer the symphysis pubis.

¹ Die Geburt bei engem Becken, p. 28

Kehrer also attributes the diminished difference between cr. il. and sp. il., in flattened pelves, to rickets, but thinks that the pull of the muscles attached to the pelvis is the principal factor in producing the distortion.

In non-rachitic flattening the two diameters usually have the normal relation to each other. On the other hand, the difference between them is very small in a considerable proportion of normal pelves.

Litzmann, as the result of extended researches, makes the following statement:

"The mean difference of the two transverse diameters is, in normal pelves, as in the dried skeleton, something more than 2 cm. Yet this relation is subject to great variation (nearly 5 cm.) corresponding to the varying degree of curvature of the iliac bones. In more than two-thirds of the cases the difference varies between 1.3 cm. and 2.7 cm. In nearly one-fifth it exceeds this amount; the large pelvis appears more closed in front; the distance of the anterior superior iliac spines is as much as 5.4 cm. less than the greatest distance of the iliac crests from each other. More rarely, in a little more than one-tenth of the cases, the curvature of the iliac bones is less; they open forward; the difference between the two transverse diameters falls as low as 0.45 cm."

Spiegelberg¹ formulates with great definiteness the use that may be made of these two diameters in ascertaining the type of any pelvis under examination. I quote his statement in full:

"The results obtained may be as follows:

"*a.* The distances are of average length, and their relation to each other the usual one, cr. il. 2.5 to 3 cm. larger than sp. il.

"*b.* The distances are more or less below the average, but have the normal relation to each other.

"*c.* The distance of the cr. il. is average, that of the sp. il. is greater than average; the difference between them is small, has disappeared, or is even reversed.

"*d.* Both distances are below average, and, at the same time, show the relation to each other given under *c.*

"In the Case *a* we almost certainly have a pelvis of normal size to deal with.

"In the Case *b*, with one of congenitally small build, but not otherwise changed in form (generally and evenly too small).

"In the Case *c* transverse straightening and, therefore, flattening exists, with otherwise roomy dimensions.

"In the Case *d* the pelvis is small and, at the same time, flat (generally contracted, flat pelvis)."

Although he does not say so, Spiegelberg must have meant these statements to be taken as only approximately true, for the exceptions are numerous, and so experienced and learned an obstetrician certainly knew of them.

Of twenty-three specimens coming fairly under his "Case *a*," ten were contracted at the inlet. Of thirty-one in "Case *b*," fourteen could not be called generally contracted. Two out of four in "Case *c*" were normal. Seventeen cases corresponding with the definition "*d*" in-

¹ Lehrbuch der Geburtshilfe, p. 397.

cluded flat, pseudo-osteomalacic, kyphotic, and oblique specimens that could not fairly be called flat generally contracted.

Undoubtedly cases as they occur in practice would make a better showing than this, but the necessity for caution is evident. Fortunately, the evidence given by the external conjugate can always be added to that of the iliac diameters, and this will prevent the acceptance of many errors that would result from too great reliance on the latter.

DISTANCE OF THE POSTERIOR SUPERIOR ILIAC SPINES.

To determine this distance the lowest point accessible to touch on the posterior part of the inner margin of each iliac crest is to be found, and their distance from each other measured either with the pelvimeter or a tape. In the normal dried pelvis I have found it to average 8.6 cm. It is often easy to measure during life, but in stout patients it may be difficult. In a single case Litzmann found the difference between its length during life and the corresponding measure in the dried state to be 0.6 cm. He found it to be diminished in generally contracted specimens, but to preserve the normal ratio to sp. il., while in flat, non-rachitic cases it was both absolutely and relatively smaller; still more so in flat, generally contracted ones, and most of all in the flat rachitic type.

My own results are in full accord with this statement. The distance is also diminished in the rarer cases of kyphotic pelvis¹ and Naegele's obliquity. In the latter the sacral-spinous processes are nearer one spine than the other, which constitutes a valuable diagnostic sign. Except in the generally contracted pelvis, the diminution of this diameter is entirely independent of the width of the sacrum. It is, therefore, hard to understand why Litzmann should have spoken of it as capable of indicating the breadth of the sacrum and through it the length of the transverse diameter partly depending upon it.

ADDITIONAL EXTERNAL MEASUREMENTS.

Kiwisch has proposed that the external circumference be measured in a plane passing through the upper border of the symphysis and the spinous process of the last lumbar vertebra. This circumference averages about 90 cm., and is said to vary but little in normal pelves. If it is as low as 75 cm. or 65 cm., as it may sometimes be, the pelvis is certainly much contracted.² It seems evident that this measurement cannot be relied upon except to confirm conclusions arrived at by other means; but, as it is easily and quickly made, there can be no objection to taking it into account.

A number of oblique external diameters have been proposed as a

¹ Spiegelberg: *Lehrbuch d. Geb.*, pp. 445, 446.

² Carl Braun: *Lehrbuch d. Ges. Gynäkologie*, 2te Aufl., p. 671.

means of ascertaining the presence or absence of obliquity at the brim. The most important of these diameters are measured from the anterior superior spinous process of the ilium, on each side, to the posterior superior spinous process, the tuberosity of the ischium and the trochanter, of the opposite side. It is difficult to fix upon the points, whose distance is to be found, with the necessary precision. Moreover, when the measurements are properly made they are not thoroughly reliable. They may be of value when taken in connection with other evidences of asymmetry, but taken alone they may even indicate an obliquity opposite to the one actually existing.

In the general run of cases the external conjugate with the distances of the anterior superior iliac spines, iliac crests, and posterior superior iliac spines will tell all that external diameters are capable of telling. All taken together, they will furnish a strong indication of the type of the pelvis, and, if contraction exists, they will give a rough notion as to its extent. This, however, is not sufficient in a case of deformity, and the investigation must be pursued further by means of internal examination.

THE DIAGONAL CONJUGATE.

This is at once the oldest and the most valuable of all pelvic measurements. It was used by Smellie and enabled him to give the first estimates of the varying degrees of contraction that had any precision. When accurately made and carefully interpreted it gives the length of the true conjugate with a degree of precision that leaves little to be desired. Difficulties occur, however, both in making and in interpreting the measurement, and these require minute attention.

The measurement consists in the introduction of two fingers into the vagina, pressing the end of the middle finger against the promontory, bringing the radial edge of the hand against the sub-pubic ligament, marking the point of contact, and finally, after withdrawal of the hand, measurement of the distance from the mark to the end of the middle finger. It is not always possible to do this. In 611 cases in which Litzmann¹ attempted to determine the diagonal conjugate he succeeded in 301 and failed in 310. The promontory could not be reached in 61. The promontory was reached with difficulty, but its distance from the sub-pubic ligament not accurately measured, in 15. The measurement was hindered by resistance of the external genitals—rigid perineum, œdema of the vulva, etc.—in 17. It was hindered by low position of the uterus, head, or bag of waters in 175. Cause of failure not given in 42. The fact that in the majority of all these failures the cause was interference of the uterus, head, or bag of waters cannot fail to arrest attention. It clearly shows the wisdom of undertaking the examination early. And

¹ Die Formen des Beckens, p 4

since, in cases of contraction, premature labor is one of the most valuable methods of obviating the difficulties that would otherwise occur, the examination ought to be made when the patient is received. On the other hand, if the *head* prevents measurement, and is not impacted, that is so much evidence against the existence of contraction at the brim. In about one-fourth of the failures the cause was difficulty in reaching the promontory. These are only partial failures however, for a minimum value for the diagonal conjugate, and through it for the true conjugate, will be given, and this may be all that is needed.

The attempt to reach the promontory will be much favored by attention to the following points first laid down by Michaelis.

1. Bladder and rectum must be empty.
2. The patient should lie on her back with knees drawn up, the coccyx and perineum entirely free, but the sacrum elevated on a cushion so as to diminish the inclination of the pelvis as much as possible.
3. The hand must be well oiled and the labia or hairs must not be pushed in.
4. The examining arm must be supported in overcoming the resistance of the perineum, otherwise it will soon be exhausted and begin to tremble. Michaelis used the left arm, in order to have his right hand free, and placed the left foot upon a stool so as to bring the knee to press against the elbow, thus taking part of the strain off the arm.
5. The elbow must be dropped until the forearm is horizontal, perhaps even further.
6. The ring and little fingers must be bent at right angles at the first joint but not supported in the hand; only the surfaces of the first phalanges are to exert pressure.
7. Continued steady pressure is to be kept up so as gradually to overcome the resistance, but it must not be exerted upon the pubic bones.

The posterior wall of the pelvis is to be followed upward, and the promontory is recognized by the breadth of the cartilage between it and the last lumbar vertebra. After fixing the end of the middle finger on the middle of the promontory *the index finger of the right hand should carefully examine the posterior surface of the symphysis pubis, in order to compare its direction with that of the examining fingers*, in view of the possible necessity for a correction on account of the angle between the true conjugate and the symphysis being greater or less than usual. Then, after carefully making sure of the ligamentum arcuatum, the radial edge of the examining hand is to be brought in contact with it and the point marked by the nail of the right forefinger. Michaelis recommends that in doing this the elbow be raised, and the forearm brought into extreme pronation, so that the sensitive volar surface be directed toward the ligament. He thinks that most errors come from not accurately marking the anterior point. The left hand having been withdrawn,

as nearly as possible in the same position, the distance between the ulnar side of the end of the middle finger and the mark left by the nail can best be taken by the pelvimeter.

The diagonal conjugate having been measured, it remains to deduce from it the true conjugate. This is usually a very simple matter, consisting merely in the subtraction of the average difference between the two. Playfair,¹ in agreement with Baudelocque and the older obstetric writers generally, gives it as $\frac{1}{2}$ " (1.27 cm.), but this is certainly too small. Lusk² subtracts from $\frac{3}{4}$ " to $\frac{1}{2}$ ", according to the height of the symphysis. Spiegelberg³ and Carl Braun⁴ mention 1.8 cm. (0.72") as a general average.

My own measurements of ten normal pelves show an average difference between the two conjugates of 1.73 cm., while in forty-one flattened or generally contracted specimens it is 1.85 cm. (0.73"). If 1.8 cm. or $\frac{3}{4}$ " be taken, it will be near enough to the true average for all practical purposes. But the average difference may not be correct for an individual case. I have found the actual difference to vary from 0.8 cm. to 3.6 cm. It is, therefore, necessary to inquire into the number and extent of the errors that would result from assuming the average difference as fixed.

In forty-one flattened or generally contracted pelves I found that subtracting 1.8 cm. from the diagonal conjugate gave an error in the length of the true conjugate not exceeding 0.5 cm. ($\frac{1}{5}$ ") in twenty-nine, or 71 per cent.; exceeding 0.5 cm., but not exceeding 1 cm. in eleven, or 27 per cent.; exceeding 1 cm., in one case, or 2 per cent. Here, of course, the proportionate number of serious errors is excessively large, owing to the fact, already twice mentioned, that museum specimens include an undue proportion of greatly distorted pelves. It was the rule of Michaelis to subtract a fixed average, except where there was manifest reason for its being too great or too small.

In trying to account for the comparatively few serious discrepancies that do occur, the variation in the height of the symphysis naturally suggests itself. Taking 4 cm. as the average height of the symphysis, and constructing on paper the triangle formed by it and the two conjugates, it will be found that each variation of 0.5 cm. in the height of the symphysis makes a corresponding variation of 0.3 cm. in the difference between the conjugates.

It might naturally be expected, then, that where the symphysis is not of the usual height a correction amounting to three-fifths of the variation would eliminate many of the errors in the estimation of the true

¹ System of Midwifery, 3d Am. ed., p. 386.

² Lehrbuch d. Geburtshilfe, p. 400.

³ Sci. and Art of Midwifery, p. 467.

⁴ Lehrbuch d. Gesamten Gynaekologie, p. 673.

conjugate. Such an expectation is not justified when put to a practical test.

In my cases the greatest difference of all between the two conjugates was found along with an average symphysis; the least of all, along with one greater than the average.

Taking thirty-nine¹ of these cases the sum of all errors resulting from the subtraction of a fixed difference, 1.8 cm., was 15.7 cm., an average of 0.4 cm. Making the correction for variation in the height of the symphysis, many errors were diminished, but others were increased, so that the sum total was a trifle greater, 16 cm. instead of 15.7.

This remarkable result shows at once that there must be another and more variable factor in the difference between the conjugates; and the only one possible is the conjugato-symphysial angle, which has for its sides the true conjugate and the line joining its anterior extremity and the middle of the subpubic ligament. I found this angle in each case by plotting on paper, three sides of the triangle being known. It averaged in the thirty-nine cases $106^{\circ} 30'$, which corresponds closely with what Litzmann² appears to take as the average, viz., 105° .

In the case having the greatest difference between the conjugates, this angle was also greatest, reaching 145° . On the other hand, the smallest difference was associated with the smallest angle, viz., 86° . By taking half as many millimetres as the difference in degrees between the angle and its average, 105° , as the proper correction for the amount to be subtracted from the diagonal conjugate in each case, all the great errors are much reduced, and the sum total is brought down to 11.4 cm., although no attention is paid to the height of the symphysis. But by combining a correction for the symphysis with one for the conjugato-symphysial angle the best result is attained, the sum of all errors in the thirty-nine cases being 6.8 cm.

Now, how are we to make any practical application of these facts? The difficulties are obvious, for, while the height of the symphysis can easily be taken, it alone is nearly, if not quite, useless, and the situation of the angle does not admit of its being measured. True, many instruments have been devised in order to measure it, but their objectionable features have so far proved fatal to their extended use. Spiegelberg thinks it easy, by taking the height of the symphysis, together with its inclination and the height of the promontory into consideration, to make any correction that may be necessary. Others object that, in reality, it is very difficult, and the point certainly seems to be well taken. It must be borne in mind that the height of the promontory above the brim, and the inclination of the symphysis to the horizon are of no con-

¹ In two, owing to an oversight, the symphysis was not measured.

² *Geb. bei engem Becken*, p. 32.

sequence, except in so far as they influence the conjugato-symphysial angle. Michaelis's method of estimating any variation in this angle, already mentioned in connection with the measurement of the diagonal conjugate, seems to be the simplest and best.

The average amount to be subtracted should be adhered to, except where the reasons for changing it are manifest, and then it will be safer to make the correction too small rather than too large. Lusk aptly remarks, in this connection: "It is just here that judgment and experience furnish the best safeguard against vital inaccuracies."

THE TRANSVERSE DIAMETER OF THE BRIM.

The true conjugate being the shortest and most frequently contracted diameter of the inlet, and at the same time the one admitting of most accurate determination, has accordingly been regarded as by far the most important as a guide to treatment. Nevertheless, the enormous clinical difference between a simple flat pelvis and a generally contracted one of the same conjugate, makes it extremely desirable that some accurate method of finding the transverse diameter be found.

It has long been recommended that the varying degree of ease or difficulty with which the lateral walls of the pelvis can be reached in internal examination be taken into consideration, in connection with the external transverse measurements already discussed, as the best means of attaining the desired knowledge. This kind of an examination should always be made, changing the hand so as to reach both sides of the pelvis under the same conditions. This will at the same time be a valuable means of detecting obliquity.

Löhlein¹ has made an extensive study of the transverse diameter and has devised a method of computing it from the distance between the middle of the ligamentum arcuatum and the upper anterior corner of the great sacro-sciatic foramen of each side. This distance he calls the oblique ascending diameter, and measures it in the same manner as the diagonal conjugate. In the normal pelvis it is 2 cm. less than the transverse diameter. In flat pelves the relation between the two is inconstant, but in five generally contracted pelves Löhlein found a tolerably constant difference averaging 1.57 cm. In flat generally contracted pelves he found the individual variations to be greater, but still hoped that further experience would make his method useful in these cases.

As far as I have been able to test this method by measurement of fourteen specimens the result has not been encouraging. The number of cases, however, was too small and the types too varied to test thoroughly Löhlein's proposition, which refers only to generally contracted and flat generally contracted cases. We ought not to expect a constant

¹ Zur Beckenmessung, Ztschrift. f. Geb. und Gyn., vol. xi.

difference between the two diameters, but rather a constant ratio, and only in case the whole examination indicates a pelvis of normal form, though diminished size. In this country the most tragic results have been associated with just such cases. It is probable that in these pelves six-sevenths of the oblique ascending diameter is a close approximation to the transverse. Of course, both sides should be measured, and the mean taken. A difference between them of more than a few millimetres is evidence of obliquity.

DIAMETERS OF THE OUTLET.

The outlet being but very rarely more contracted than the inlet, comparatively little attention has been paid to it. It is not difficult to ascertain the direct diameter with sufficient accuracy. Attention to the curvature of the sacrum, together with its inclination to the lumbar column, will often be sufficient to show whether or not there is any considerable contraction in this direction.

The distance from the subpubic ligament to the sacro-coccygeal junction may be measured directly in the same manner as the diagonal conjugate, or, more conveniently, it may be taken externally with the pelvimeter and 1 cm. to 1.5 cm.¹ be subtracted.

The transverse diameter of the outlet cannot be easily or accurately measured, partly because soft parts of variable thickness cover the ischial tuberosities and also because the points whose distance is to be taken are not easily recognized even in the dried pelvis. With the patient on her back, the thighs flexed on the abdomen, and the knees moderately separated, the distance can be approximately measured with the pelvimeter or a tape, 1 cm. to 2 cm. being added for the skin and fat.

In conclusion, it seems proper to offer some definite opinions as to the bearing of pelvic measurements on obstetric practice. I would suggest the following:

1. Measurements are not to be regarded as necessary only in rare cases and hence but rarely employed. On the contrary, the pelvis of every pregnant woman should be examined when she is received as a patient or as soon afterward as possible.

On this point Spiegelberg says:

"It cannot be too urgently impressed that the pelvis is to be included in the examination of every pregnant and parturient woman, even when there is not the least suspicion of contraction. In this way, not only will the overlooking of anomalies be avoided, but the obstetrician will be prevented from finding himself at some time during labor brought face to face with difficulties of which he had no presentiment, and which, with timely knowledge he might have avoided or at least made less formidable."²

¹ Briesky, quoted by Carl Braun: *Lehrb. d. Ges. Gynäkologie*, p. 670.

² *Lehrb. d. Geburtshilfe*, p. 335.

The fortunate termination of previous labors by no means does away with the necessity for this examination. It is an undoubted fact, amply sustained by experience, that in cases of contraction the difficulties tend to increase with the number of labors, and while the first and second labors may end favorably, later ones may require the severest operative procedures.¹

2. The examination should consist in measurement of the external conjugate, anterior and posterior iliac spines, and iliac crests. If these external measurements indicate a normal pelvis, the examination may end with them. But if contraction is suspected, the diagonal conjugate and the oblique ascending diameter of Löhlein should also be taken. These measurements should be considered in the light thrown upon them by the previous history and general condition of the patient, and especially by a careful internal and external palpation of the pelvic bones, which will reveal the necessity for further measurements if it exists.

ON THE DISTURBANCES OF THE TACTILE SENSORY FUNCTION OF THE SKIN IN CASES OF PERIPHERAL NEURITIS, WITH THE NARRATIVES OF TWO UNUSUAL CASES OF PERIPHERAL PALSY.

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THE disturbances of the tactile sensory function of the skin, in their extent, distribution, and quality, are apparently, in the experience of all observers, the most uncertain and variable of the manifestations of multiple peripheral neuritis—so much so, that now and again it would appear as though such disturbances were more accidental than essential in the clinical examples of that disorder which come before us.

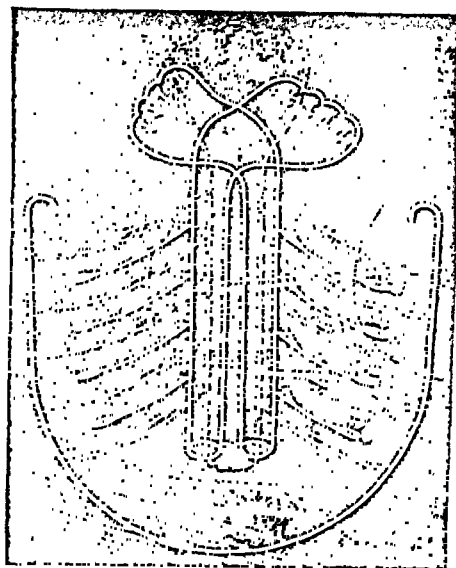
In peripheral neuritis, as in most other disorders of the nervous apparatus, it is the affection of motility which not only, as indeed is natural, most impresses the sufferer, but which is also more dwelt upon by the observer, by reason of its easy estimation, and as demanding, more directly, measures for its alleviation. The close association of sensory with motor paths in all parts of the nervous system, and a deeply rooted notion that inflammatory processes, especially those of an acute nature, are more prone to conform in their distribution to the limits of vascular and morphological areas, than to those of functional or physiological areas, have made it difficult for some to conceive of an inflammatory lesion which, in the periphery of the nervous apparatus, would pick out

¹ Michaelis : Das enge Becken, p. 195.

motor as distinct from sensory paths, or which might involve one or the other as distinguished from both.

The self-contained nature, so to speak, of the two systems, sensory and motor, in regard to their function and disease, in spite of their close association in a morphological sense—though generally recognized, so far as the brain and spinal cord are concerned, has not been admitted to obtain in the periphery. In the spinal cord, for instance, no one hesitates to admit the occurrence of lesions distinctly and exactly confined to physiological, as distinguished from morphological, areas, where the

FIG. 1.



In this diagram, which is based upon one figured in Dr Pye-Smith's *Syllabus of Lectures on Physiology* (London, 1885), the motor apparatus, indicated by the continuous line, is shown to consist of certain parts of the convolutions of the various arbitrary anatomical regions of the brain and spinal cord, of the peripheral nerves, muscles, tendons, and bones. The sensory apparatus, indicated by the interrupted line, consists of the general surface of the body and all the various parts leading up to and terminating in some, at present, undetermined parts of the cerebral cortex.

spread of a lesion is determined and its limits defined solely by the path of some special impulse. Take, for example, the case of poliomyelitis anterior acuta, the stated lesion of infantile palsy, in which we, without much hesitation, assert that an acute inflammatory process is limited to a certain portion of the gray matter of quite arbitrary anatomical limits, while the contiguous and, anatomically speaking, continuous parts within the cord, are unaffected. The self-contained nature of the two nervous systems, efferent or motor, and afferent or sensory, is shown in the above diagram.

In looking along the whole length, so to speak, of the motor machine, it is clear that, at the two extremities, the anatomical arrangements are such as to constitute a considerable separation in locality between the tactile sensory and the motor paths. The separation has been amply established by clinical and experimental observation, as well in the spinal cord as in the brain itself, and, looking to the distal extremity, the separation in position of the ultimate ramifications of the spinal nerves is necessarily as obvious as the morphological individuality of the skin and muscle to which they are supplied. It is only when one comes to the intermediate sections of the two systems that one fails to realize so clearly their independence.

The histological identity of the two systems and their juxtaposition anatomically make it at first sight difficult to admit that in a compound nerve trunk there may be a lesion affecting alone the sensory or motor path.

Looking again at the two machines, sensory and motor, it is clear that a lesion at any point in the motor apparatus, in the brain, the spinal cord, the motor nerves, or the muscles, must cause an impairment or loss of motion in the same way that a lesion of the skin or at any point in the sensory system up to and including the tactile sensory centres, wherever they may be, must cause an alteration, loss, or impairment of tactile sensation.

My object, indeed, is to suggest that, in the consideration of the whole question of peripheral affections of the nervous system, we have two peripheries to deal with; that while both are, as far as experience at present goes, most commonly affected together, yet they may be and are affected quite independently of each other, that the systemic disposition of lesions, so readily admitted in the case of the spinal cord, must be allowed to obtain in the case of the peripheral nerves, so that lesions in the periphery may be, as in the centres, purely motor, or purely sensory, or mixed in their manifestations.

The practical point I wish to make is, that it is possible to have an extensive and pronounced affection of the peripheral motor nerves without any affection whatever of their sensory companions. The antecedent probability of such a condition is, to my own mind, clear, and of its clinical and pathological actuality I hope to be able to produce some evidence.

CASE I. Spontaneous multiple neuritis with enlargement of the spleen, occurring in an anæmic girl; no affection of the tactile sense.—Emily K., aged eighteen years, was admitted into the General Infirmary at Leeds under my care on March 30, 1887, complaining of general and intense muscular weakness.

History. The patient was quite well until July, 1886—that is, nine months before the clinical report here reproduced was written by Dr.

Griffith, then resident medical officer. The onset of the illness seems to have been somewhat rapid and definite, but the only circumstance which could be, in any reason, suggested as a cause, was that, on a certain day, feeling much heated, she put her feet into cold water to cool herself. After this she vomited. There was marked general disturbance, and she was confined to bed for a fortnight, during which time there was very little change in her condition. In a short time she was unable to walk, but when the weakness actually came on is not certain, as her apparently rather acute illness covered its advent. She gradually got worse, and at last was unable to move her arms or legs with any degree of force.

During the three months immediately preceding her admission she has been improving, and latterly has begun to walk again. There has not been any difficulty in swallowing, nor alteration of voice, nor evidence of laryngeal affection. There has been no scarlet fever nor any other acute illness. Menstruation was normal until the beginning of her illness, but since then she has menstruated only three times.

Present condition. Patient is an intelligent girl, of distinctly chlorotic aspect. The face is pale, and there is a slight fulness with pigmentation underneath the eyes. The lips are of fair color. She makes no complaint, except of the weakness of the limbs.

Muscular system. The patient can walk with assistance. This she does in a very slow and feeble, but not tremulous manner. It is particularly noticed that the toe is the last part of the foot to leave the ground in progression, and, looked at from behind, the soles of the feet are seen more than normally during walking. The legs and thighs are ill-nourished, and the muscles are flabby when she lies upon her back in bed. The dropped position of the foot is very striking. Both feet are extended, so that the dorsum of the foot forms an almost continuous line with the front of the leg. The great toe is not drawn down toward the sole, but is in line with the dorsum of the foot. The anterior tibial muscles are much wasted, as shown by the marked excavation between the tibia and fibula. She can raise the legs as a whole against only a moderate amount of resistance, the muscles of the thigh standing out fairly well, though they are clearly much diminished in bulk. She can extend the feet with some slight force, but cannot flex them to the smallest degree. The muscles of the calf, thigh, and gluteal region present nothing abnormal beyond general flabbiness. She can raise herself to the sitting posture, but cannot do so quickly. The spinal muscles do not appear to be seriously affected.

The upper extremities are small, the muscles flabby and of small size. She can raise her arms from her side, but not with any degree of force. There is some deficiency of the lower part of the deltoids. The latissimi and serrati appear to be unaffected. She can flex and extend the elbow-joint, and when this is done with great effort the supinator longus forms a narrow band just outside the biceps, as if its anterior part were less wasted than its posterior. The forearms have the appearance due to a very general and extreme effacement of their muscles. The hands are in a very striking condition, and manifest a rather strong suggestion of the "main en griffe" due to the prominence of the heads of the metacarpal bones and the wasting of the interossei and muscles of the palm, together with a very moderate degree of contracture of the paralyzed extensors and flexors. There is marked dropping of the wrist and for

practical purposes the hands are completely useless, all attempts at using them ending in a fumbling, flail-like movement of the wrist-joint only.

In all the affected parts the most careful and repeated testing failed to find even in the smallest degree any affection whatever of tactile sensory function, and this appears to have been the case from the very beginning. She has never experienced any pain or perversion of sensation whatever.

There is occasionally the faintest response to percussion of the ligamentum patellæ on the left side, but the knee-jerk cannot be obtained on the right side. The plantaris reflex is entirely absent. The abdominal reflexes are present. The faradic reaction is seriously diminished in all the affected parts, but it cannot be said that it is, at any part, totally in abeyance.

The digestive and respiratory organs appear to be normal. There is a systolic bruit at the base of the heart, probably of pulmonary origin, and of a functional character. The spleen is distinctly enlarged, being easily felt on deep inspirations at a point three inches below the left costal margin. The liver cannot be felt. The urine is normal. Temperature 99° F. The optic disks are pale, but show no sign of disease.

The patient was of an exceedingly wayward temperament, and much to the disappointment of myself and her friends insisted upon leaving the hospital at the end of six days. However, in November, 1887, I had an opportunity of seeing her, and found her to be able to walk very much more easily than previously, though I could not satisfy myself that any substantial improvement had taken place in the condition of the upper limbs.

The symmetrical distribution of the paralysis, its exaggeration in the most distant parts of the limbs, as evidenced by the marked dropping of the feet and wrists, while the muscles of the trunk were exempt, the absence of any affection of the bladder or rectum, and the non-occurrence of bed-sores, seem to me to point directly to the peripheral origin of the disorder. The enlargement of the spleen we were unable to explain, unless it was the remainder of some acute change occurring in the onset of the illness—which I very much doubt. It did occur to me that it might be associated with the general and profound anæmia which existed.

CASE II. *Multiple peripheral neuritis following a septic wound; practically no affection of sensation.*—John M., aged thirty-eight years, an engine-tender, was sent to me by his medical attendant, who, having some suspicion that the man was suffering from an anomalous form of nervous disease, wished me to express an opinion upon the case.

The narrative of events up to January 16, 1888, when I saw him for the first time, is quite clear and definite. In the first week of October, 1887, he trapped the little finger of his left hand, and a few days later the finger, having been poulticed, was incised, and some thin watery pus set free. There was particularly well-marked lymphatic inflammation of the forearm, the skin presenting a strikingly arborescent appearance. There were swelling, pain, and hardness of the left axillary lymphatic glands. At the end of fourteen days he had practically recovered from

the surgical condition, but the left hand and arm remained stiff for, perhaps, the whole of the November following.

On December 22, 1887, he returned to his medical attendant, complaining of "pins and needles" in all the limbs, with loss of grasping power, weakness of the legs, and numbness of the fingers, symptoms which he, himself, ascribed to the injury.

On January 10, 1888, thirteen weeks from the date of the injury, I saw him for the first time. He told us on this day that the stiffness of the left forearm and hand continued for three weeks after the injury, and then there appeared numbness in the fourth and fifth fingers of the left hand. Five weeks afterward the feet became numb, and were the seat of pricking sensations, and, two weeks later, the right hand was similarly affected, so that, at the end of seven weeks, the hands and feet were in a similar condition, so far as "numbness and pricking" were concerned. At the same time there was marked motor weakness in all four limbs, and the legs were slightly stiff as if from cramp. The feet were described as feeling loose at the ankle, and as scraping along the ground when walking. The gait was quite characteristic of the weakness of the anterior tibial muscles. On account of the difficulty in raising the point of the toe from the ground the whole foot had to be lifted in such a manner that when the observer was standing behind the patient the whole of the sole from the heel to the toe was seen at every step. The knee-jerks were entirely absent. There appeared to be some diminution in substance of the anterior tibial muscles when compared with his general nutrition, and they reacted only tardily to a strong faradic current. The weakness of the hands was extreme, on the left side the dynamometer registered only ten pounds, while on the right side the instrument marked thirty pounds, showing a serious diminution of power on this side also. Careful testing failed to find any alteration of tactile sensation in any of the paralyzed parts, but he stated that there had been some diminution of ordinary touch sense in the left hand.

The pupils reacted normally, and there was no weakness of vision. The optic disks were normal. Swallowing had not been affected, and was performed naturally at the time of observation. The voice was not, and had not been altered. The urine was normal. When directly questioned he said he had not had any sore throat, neither had there been any of an epidemic kind in the neighborhood in which he lived. There was no evidence of lead-poisoning or of any of the more generally recognized toxic conditions which produce peripheral palsies.

He was at once put upon a course of iron and arsenic, and gentle faradism applied to the limbs daily.

On February 3, 1888, the dynamometer registered thirty-eight pounds for the right hand, and twelve pounds for the left. He could undress himself, which he could not do before. The knee-jerk was still absent.

On March 2d the dynamometer registered seventy pounds for the right, and fifty pounds for the left hand. The knee-jerk was still absent.

On March 16th he was still improving. I failed to get the knee-jerk, though using the Jendrassik method, but the internal vastus contracted on direct percussion. The gait was quite natural.

On April 3d the right hand made seventy-five pounds, and the left seventy-two pounds, with the dynamometer. On percussion of the ligamentum patellæ a slight but distinct contraction of the right internal

vastus was seen—once, on the left side, the foot was distinctly jerked forward.

On April 22d the knee-jerks could be easily elicited on both legs, and he was practically well.

The causal relations of this case are extremely interesting, though they do not here concern us, and the only point in the case to which I wish to direct attention is, that while the patient described various subjective disturbances of sensation, such as numbness, pricking, and the like, there was not, except in the left hand, at any time, any disturbance of the ordinary tactile sense. This is a seemingly paradoxical condition, which I have now and again observed in other conditions, which may have for their anatomical bases some changes in the peripheral nerves, such as "waking numbness," for instance.

Naturally, examples of pure motor or pure sensory neuritis will be found confined, for the most part, to the parenchymatous form of the disease, for, in the interstitial variety, it is obvious that there will be no respect for the kind of fibre involved, since the connective tissue is common to all parts of the compound nerve trunk. Perhaps the best available pathological evidence of the occurrence of a pure motor neuritis is that afforded by a remarkable case recorded by Joffroy.¹ This case, published in 1879, and frequently referred to by writers on peripheral neuritis, was one of peculiar interest, in which there supervened, during convalescence from smallpox a well-marked atrophy of the muscles with corresponding paralysis. During life the case had been regarded as one of poliomyelitis anterior acuta, the entire absence of any tactile sensory disturbance, in accordance with the views held in 1871, when the case was under observation, determining Joffroy to that diagnosis. Ultimately the patient died of tuberculosis, and the examination of the parts involved discovered no lesion of the spinal cord, or of the nerve-roots, but in the muscles and peripheral nerves the following changes were found:

"The atrophied muscles presented a pale, dead-leaf color to the naked eye, and, on microscopic examination, disappearance of the striæ, proliferation of the intra- and extra-cellular nuclei and a granulo-fatty change of the substance of the muscle fibre. Several nerves from the limbs were examined. To the naked eye they presented no abnormal appearance. On microscopic examination, in all the sections examined, a number of perfectly healthy tubules were visible, but in a large number of other tubules there was noticed to be a segmentation more or less advanced of the white sheaths, and also numbers of fatty granules, which, in some instances, entirely filled the tubule, while the nuclei of the primitive sheath were largely increased in number."

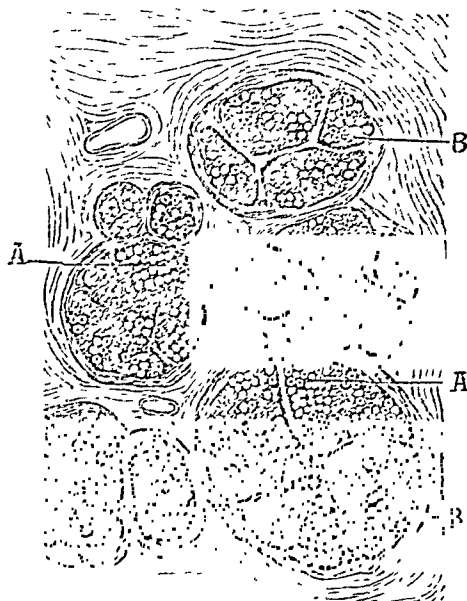
These appearances are clearly shown in the drawings accompanying Joffroy's paper—two of which are here reproduced.

The same description applies, also, to a second case, recorded in the

¹ Archives de Physiologie Norm. et Path., vol. xi. p. 177.

same paper, in which a man suffering from phthisis was also paraplegic. The paralyzed limbs in this case showed normal sensibility to pain,

FIG. 2.

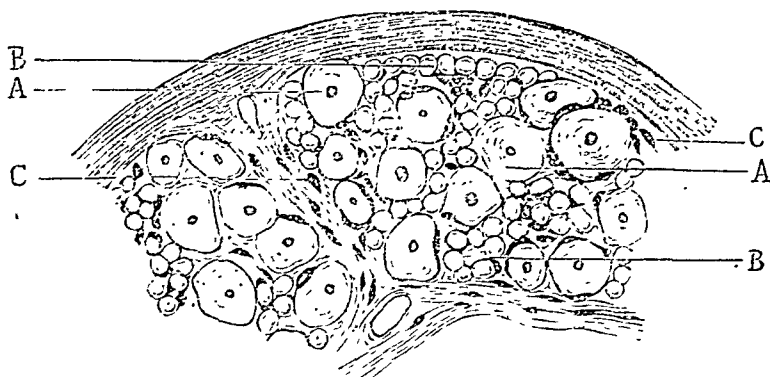


Section of the left radial nerve.

A. Normal nerve-fibres. B. Remains of nerve-fibres affected by parenchymatous change.

temperature, and pressure, though, on account of mental hebetude, there was just the smallest reservation as to the integrity of the tactile sense to more delicate impressions.

FIG. 3.



High power view of the same lesion.

A. Normal nerve-fibres. B. Remains of nerve-fibres affected by parenchymatous change.
C. Nuclei belonging to the primitive sheath.

In 1879, Déjerine¹ published an account of two cases of Landry's paralysis (a disorder which has, for one of its most striking features, an absence of all disturbance of the tactile sensory function of the skin) in which there was found, post-mortem, a perfectly natural condition of the spinal cord, while there were most marked inflammatory changes in the anterior spinal roots, the nerve-trunks, and intra-muscular nerve-fibres.

In 1880 Eisenlohr² recorded a fatal case of lead palsy, in which, as is generally found, there was no affection of the tactile sense, but in which, at post-mortem, a well-marked neuritis of the affected parts was found.

Gombault³ has also recorded a case of lead palsy under Charcot's care, in which were found changes in the peripheral nerves almost identical with those described in Joffroy's case above quoted. In this case there was, also, no disturbance of sensibility.

(The selective power of lead, or, if one may so speak, the striking originality of the distribution of lead palsy, is certainly most remarkable, for it appears to be able not only to take the motor and leave the sensory side of the nervous system, but seems to be still further able to confine its action to certain sections of the neuro-muscular apparatus. I need scarcely remark the great infrequency with which the muscles of the eye, the respiratory muscles, and the muscles of the face are affected in lead poisoning.)

Dr. Byrom Bramwell⁴ has quite recently published a case of well-marked alcoholic paralysis, "in which myalgic pains and tenderness were absent, and in which there was very little affection of cutaneous (tactile) sensibility," "until," curiously, "the stage of convalescence was reached, when marked hyperæsthesia of the skin was developed."

All these cases seem to me to suggest that certain toxic substances, such as lead, and certain infectious processes, such as that of an ordinary septic wound, have, under some circumstances, the power of selecting certain parts of the nervous structures, according to the function of those structures, and not according to their anatomical position and association, for the field of their operation. This notion appears to me to be no more difficult of acceptance than is the fact that the influences which bring about such diseases as locomotor ataxy and a variety of spastic paraplegias pick out from the spinal cord a purely sensory tract in the one instance, and a purely motor tract in the other—both of which are simply conducting paths, taking on a diseased process at any

¹ *Recherches sur les Lésions du Système nerveux dans la paralysie Ascendante Aigue.* Paris, 1879.

² *Deut. Arch. f. klin. Med.*, 1880, xxvi. p. 543, quoted by Dr. M. Allen Starr, in his *Middleton-Goldsmith Lectures*, *Medical News*, February 12, 1887.

³ *Archives de Physiologie Norm. et Path.*, 1873, p. 593.

⁴ *AMERICAN JOURNAL OF THE MEDICAL SCIENCES*, June, 1888, p. 575.

point external to, and usually quite remote from, the central organs in which they end.

In this regard I have often thought that rheumatic facial paralysis—that form of facial palsy, that is to say, which follows upon exposure to cold—is a condition of great interest. Of distinct and clear evidence of the part of the portio dura affected in such cases there is none that I know of forthcoming. The circumstances of the malady forbid that there should be such evidence. It is generally stated that the lesion in question is situated in the Fallopian canal, and that the suggestion of the palsy being due to the direct action of cold upon the terminals of the nerve is, for various reasons, untenable; still I fail to see why, such a cause as cold being allowed, it should be said to act upon a deeply seated and bone-protected part of the nerve-trunk in preference to those parts of it which are so much more obviously exposed on the face. However, adopting whichever hypothesis we may, I would ask, Why do we not see with something like corresponding frequency the sensory nerves of the same region affected by similar exposure? In my experience simultaneous affections of the corresponding fifth, in cases of Bell's palsy from cold, is exceedingly rare. May this not be that the exciting cause has some preference, as it were, for a motor, rather than for a sensory fibre?

I have ventured to treat the subject at such length because I deem it one of great practical importance. The more we can, if I may so speak, place the causes of paralysis in the periphery as distinguished from the centre of the nervous system, the more intelligible and the more successful will our treatment become. Moreover, it has seemed to me that there is a tendency to set up, while our experience is still limited, some affection of the tactile sensory nerves as a test of peripheral palsy, and so to exclude some cases from the category of peripheral neuritis to which they rightfully belong. It is against the institution of such a test that my remarks are directed.

THE PATHIOLOGY AND TREATMENT OF INTRA-NASAL SCLEROSIS.

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THE pathogenesis of advanced nasal catarrh has received but little attention from pathologists, and the descriptions of the conditions present are of the crudest character in all the general text-books.

Works on rhinology are but little more satisfactory, and to the recent writings of Bosworth, of New York; Mackenzie, of Baltimore; and Seiler, of Philadelphia, we owe by far the greater part of our knowledge of the subject. Detailed accounts of the treatment of this stage of nasal inflammation and of its results are scarcely to be found.

Leaving, therefore, the simpler phenomena of rhinitis simplex, I will pass to the consideration of true rhinitis hypertrophica. This disease is readily divided into two stages (J. W. Mackenzie): *a*, dilatation with hypertrophy; *b*, complete hypertrophy—or, as I much prefer to call it, *sclerotic rhinitis*. The appearances, on inspection of the latter stage, are most characteristic; anteriorly the lumens of the nares are found to be of fairly normal diameter, rarely is there much stenosis; the turbinated bodies, particularly the lower, are usually of light color, pink, grayish, or yellowish; their surface is very irregular and bossellated; and, on pressure with a probe, their hard glassy look is found to be due to a dense elastic consistence. Enchondroses of the nasal septum are of very frequent occurrence, especially at the extreme anterior lower border of the cartilage, or a long, sometimes blade-like, ridge may extend the length of the septum narium. Frequently the turbinated body will be found to be markedly grooved by a corresponding ridge projecting from the cartilage, although a considerable interval of clear space may intervene at the time of examination; showing, conclusively, that during the first stage of the hypertrophic process, and during the preceding stage of rhinitis simplex (*i. e.*, vasomotor paresis), the turbinated body pressed against the nasal septum. The history of very troublesome stenosis at some previous date can nearly always be elicited in the case of intelligent patients.

The middle turbinated body is greatly enlarged at its anterior extremity in many cases; it is commonly compact and fibrous in consistence, and may be so large and hard as to be firmly jammed in the nasal lumen. In advanced cases these nasal fibromas of the middle turbinated frequently undergo myxomatous degeneration—forming *myxofibroma* of Ziegler—and are then soft and gelatinous, giving the appearance of a sessile polypus. In other cases the middle scroll is extensively atrophied, and has a thin, pinched, blade-like appearance.

Posteriorly, as shown by the rhinoscope, the general mucous membrane has undergone thickening and fibroid change; the membrane is very light pink or yellowish in color; hard and dense in appearance and on testing with the laryngeal probe. The lips of the Eustachian tubes may be entirely yellow, and quite hard from fibroid change. These are usually sessile, or more rarely pedunculated posterior hypertrophies; small, usually much corrugated masses jutting from the floor of the nose, from the extremity of the lower turbinated body, or least usually from the bony septum. They are white or yellow, and firm

and elastic in consistence, and are oftenest somewhat symmetrically distributed.

Following the almost universal rule of intra-nasal inflammations the upper and lower pharynx present marked and advanced changes. The glands forming the much talked-of, but slightly vaguely defined, *pharyngeal tonsil*, are atrophied, and those which have not undergone sclerosis are swollen and intensely irritated, and secrete mucus abnormal in both quality and quantity. In advanced cases the size of the pharyngeal vault is notably increased by atrophic changes.

The lower pharynx shows decided atrophy, the changes having been already described by me in a previous paper;¹ the larynx, as there mentioned, is, in my experience, always involved, and the bronchi are not infrequently implicated.

The *pathology* of sclerotic rhinitis may now be said to be perfectly understood, the studies here detailed seeming to bridge over the remaining gaps in our knowledge. As an inevitable result of long-standing rhinitis, we find the mucous membrane, the submucous, and cavernous connective tissue, all densely infiltrated with numerous leucocytes, which infiltration, following the universal law of chronic inflammations, becomes "organized" into new connective tissue. By the contraction and pressure of the new growth, and other processes detailed below, the vascular sinuses are gradually obliterated, so that they are found only subjacent to the periosteum or perichondrium (Seiler). There are four modes of obliteration of the "erectile sinuses" in sclerotic catarrh (Mackenzie): 1. Hypertrophy—new formation—of the connective tissue, and contraction of the same, above described. 2. "By obliteration of their lumen by masses of round cells," and organization of the same. 3. By the formation of buds on the sinus walls, first noticed by Councilman. 4. By the formation of thrombi in some cases. The first two processes are those common to any chronic inflammation. The formation of these "buds" or septa is of great pathological importance; in some sections half the sinuses will contain "buds" of fibrous tissue, more or less completely blocking up their lumen. Their growth is due to the puckering of the sinus walls from the general contraction, plus the persistent irritation and hypertrophy of fibroid tissue which are present. The formation of parietal thrombi, discovered by Mackenzie, of Baltimore, is what might be expected from the active bloodvessel changes which are taking place. They are probably common in those exceedingly rapid cases of nasal catarrh in which the grade of chronic inflammation is of an acute type.

It will at once be seen that these phenomena can bring about but one result, the conversion of the affected turbinated tissue into a fibrous

¹ The Medical News, October 22, 1887.

mass. Tissues, other than the vascular sinuses, are synchronously affected. The pressure exercised by the new growth induces atrophic changes in the glandular structures, which are finally destroyed; the ordinary nutrient bloodvessels are also constricted, and the vicious circle of changes goes on until, in extreme cases, the lower turbinated body may be represented by a mass of mere scar tissue.

Early in the pathological history of sclerotic rhinitis, changes in the epithelial layer take place, shedding and proliferation, and later in the process the formation of hypertrophic *papillæ*. This morbid phenomenon I have never seen noticed by any previous writer. It will frequently be observed, when examining cases of long-standing rhinitis, that the mucous membrane covering the scroll-like bodies has a coarsely velvety, or very minutely bossellated contour; this appearance is due to the growth of *papillæ* from the mucous membrane; multiple "*papillomata*" of very minute size springing from the surface of the turbinated tissue. The structure of these projections is precisely that of the so-called typical *papillomata*; they are made up of vascular connective tissue capped by layers of epithelium, the bloodvessels being frequently numerous, and forming vascular loops. These minute *papillomata* may undergo atrophy, the surface of the turbinated body becoming smooth and glassy, or they may persist indefinitely. Clinically, their importance is doubtless considerable, as they must add to the always present septic condition by entangling morbid products and increasing the difficulty of clearing the nose either by blowing or by medical means.

The pathological changes in the pharyngeal vault are similar to those found in the scroll-like bodies, and may be briefly described as gradual glandular and vascular atrophy from the pressure exercised by the new formed connective tissue.

The *causes* of sclerotic rhinitis cannot be given in the present state of our knowledge; the long catalogue of etiological factors, given in many memoirs and text-books, must appear to any analytical mind illogical and untenable. Early stages of nasal catarrh are dependent in part on climatic, in part on anatomical and developmental, and largely on factors as yet indefinable, which are part of our civilized life. The fads of rhinologists, when weighed from the standpoint of the comparative pathologist and cautious scientist, will be found to be but sieves. The very popular one of unphysiological clothing need only be mentioned; surely no unprejudiced man of science will deny that clothing is now as well adapted to the needs of the human organism as at any time in four hundred years; yet nasal diseases are increasing in frequency yearly on our Atlantic seaboard. Also in many European States, where the dress does not in any way differ from that worn in the United States, chronic catarrh is rather a rare disease. It need only be added that nasal in-

flammation is much more common in men than in women, and is rather rare among actresses and opera singers.

Why a certain, fortunately small, proportion of cases of chronic rhinitis run on to typical sclerotic catarrh, and the larger portion remain *in statu quo* until old age comes to sap the vitality, cannot be stated; a *low bloodvessel vitality* seems to be the immediate cause. Intra-nasal "sclerosis" differs from "atrophy" only in the rapidity and extent of tissue implicated. The two diseases have, however, very marked differential points, and call for somewhat different treatment.¹

The *symptoms* of sclerotic rhinitis are many, frequently serious, but far from distinctive; rarely is there either hypersecretion or nasal stenosis, though the first may be found in cases in which myxomatous changes have taken place, and large septal enchondroses may cause the latter. Dribbling of thick, tenacious mucus from the posterior nares—from the diseased pharyngeal tonsil—is common, and is often most bitterly complained of. Frontal headache, from congestion of the frontal sinuses, and irregular and frequently severe head pains from implications of other bony sinuses, are frequently the cause of patients presenting themselves for treatment. The sense of smell is blunted, and taste is, consequently, frequently much impaired.

The chronic pharyngitis and laryngeal implication always present give the symptoms already detailed in a previous paper.

The laryngitis, tracheitis, and even chronic bronchitis, so frequently found in advanced cases of this disease, are directly symptomatic of the nasal lesions. As Bosworth has so well shown, the turbinated bodies are almost the sole source of the moisture needed to saturate the inspired air (about 5000 grains of water in twenty-four hours). When from sclerotic disease the "erectile tissue" is unable to throw out the proper amount of moisture, the inspired air reaches the bronchi in a dry and unprepared condition, with the result of irritation of the mucous membrane of the lower respiratory tract, and the lighting up of other grave forms of disease.

Of remote symptoms, languor, nervous irritability, and a variously described feeling of abnormality "in the head," are the commonest. Asthma, or at least violent panting after slight exertion, is frequently complained of. Patients in whom the scroll-like bodies are represented by mere scar tissue have invariably, in my experience, been much below par, complaining of various neurasthenic indications, general ill health, and a great variety of symptoms—whether *post hoc* or *propter hoc* no claim will be made in the present paper, but the fact is a certainty. The conjunctivæ are usually injected, and when referred to an oculist

¹ See The Medical News, April 2, 1887.

gross eye changes are generally reported present—the relation of the two diseases is a question for the ophthalmologist.

The Eustachian tubes and middle ears are always involved in prolonged cases of this disease; impairment of hearing, tinnitus aurium, aural vertigo, and what may be called ear malaise, are very frequently complained of, and aural sclerosis, with extreme deafness, is one of the results of this disease in some cases. The glossal papillæ are enlarged and diseased, and dyspepsia is a most common concomitant. Mental symptoms have been noted by many observers: my experience has led me to believe them always dependent on the secondary ear lesions; where deafness and tinnitus have not appeared the mind will be uninfluenced. Lastly, sleep disturbances and insomnia, whatever relation they may bear to the nasal lesions, are of the commonest occurrence in this disease.

The special *treatment* of this form of intra-nasal inflammation has been greatly neglected; many writers claim to have *cured* this condition. I am aware that some gentlemen have also “cured” hepatic sclerosis and gastric carcinoma. But to my mind the reproduction of so highly organized a tissue as that of the nasal turbinated bodies, when totally destroyed by fibroid changes, seems a miracle worthy of Buddhist adepts, and totally impossible to accomplish by any means the technique of which has been described in less occult lore.

Although a cure of sclerotic rhinitis is a result impossible for the average rhinologist to obtain, yet a great deal can be done by careful and prolonged treatment, even in the worst cases. Comparative comfort may be secured, the disease practically arrested, and the remote results held off for an indefinite time.

The treatment may be divided into medical and surgical measures. The use of “alteratives” in spray is of great value; the sulpho-carbolate and the iodide of zinc; solutions of thymol or of “Listerine;” and Boulton’s solution have proved the most valuable in my hands; they must be applied with skilful and thorough technique, at first daily, and toward the end of the four, ten, or fourteen months of treatment, once a fortnight. The careless, awkward douching of the nasal cavities, by means of a “perfume atomizer,” so often witnessed, is totally without value, not infrequently hurtful, and quite unworthy the scientific technologist.

The action for good of these and similar medicines in this stage of nasal catarrh is partially due to their antiseptic and mechanical, as well as to their stimulant properties. Their first action, if properly used, is to cleanse mechanically and render antiseptic the nasal chambers; secondarily, the bloodvessels are so affected that the local blood supply is increased, the whole tone of the turbinated bodies being thereby improved. The mucous glands are also stimulated to throw off the pro-

liferated cells and abnormal mucus which clogs them, and the condition of the nasal cavities becomes for a longer or shorter period more nearly normal. More energetic stimulation is frequently called for; Seiler's iodine solutions, and tincture of myrrh diluted with glycerine to suit the individual case, are perhaps the most valuable; both are to be applied with the cotton tuft and carrier under full illumination and inspection. Mechanical stimulation, by means of cautious *curetting* of the papillomatous turbinated mucous membrane, especially of the post-nasal region, is of undoubted value. For some eighteen months I have used it as a routine measure with decided benefit. I can find no mention of its use in rhinological literature.

The faradic current applied with the positive pole in contact—by means of a suitable electrode—with the diseased turbinated body, is a very useful “alterative.” Its use calls for the most thorough care and judgment; the weakest secondary current obtainable from the ordinary office battery, as usually used, is frequently too powerful, irritating, and injurious; a rheostat may be required, or the current may be regulated by only partially immersing the zinc element.

Operative surgical treatment is very rarely called for in nasal sclerosis. If the middle scroll be enlarged and jammed, as previously described, pressure must be relieved by cautious destruction of the superabundant tissue, by chromic acid (which I usually prefer), with the galvano-cautery knife, or with the Jarvis snare. Care should be taken to remove no more than is necessary to relieve pressure, the tendency of this disease progressively to destroy turbinated tissue being never lost sight of. Myxomatous degeneration of the middle turbinated calls for special measures; chemical or galvano-cautery is inadmissible, as they must be used so vigorously that a dense, contracting scar results, which is anything but favorable to the course of the disease. The snare can seldom be satisfactorily used, owing to the position and sessile, elastic, and slippery nature of the growth. The writer's, or some similar cutting forceps, is the best means of reducing the growth, small pieces being gnawed off until all myxomatous tissue is removed. It is my habit to treat the stump with a strong glycerite of iodine.

Enchondrosis of the septum narium may incidentally require removal, for the technique of which the reader is referred to the classical paper of Seiler; they bear no direct relation to nasal sclerosis. Nasal polypi may be found, and call for operation by recognized methods. The region of the pharyngeal tonsil will call for appropriate treatment, which need seldom, if ever, be operative, the post-nasal atomizer and applicator being usually sufficient to control the symptoms. Various dilutions of fluid extract of eucalyptus, applied by the post-nasal applicator, have given the writer great satisfaction in controlling the constant dribbling from the diseased glands, plus the routine treatment already

outlined. The pharynx, larynx, and bronchi will require sedative therapeutics.

The constitutional treatment is, of course, of great importance; medicinal tonics are frequently valuable, but good hygiene with scientifically regulated outdoor exercise is of more importance. Where the patient is able to reap the benefits of climate change, the less elevated regions of the Adirondacks, the Maine woods, and similar "spruce areas," are recommended for the summer; and the highlands of the Carolinas, or, better, the plateau of Mexico, about Orizaba, are advised for the winter season.

By no method known to me, or described in medical literature, can any rhinologist hope to keep his patient permanently free from symptoms by any one course of treatment in the climate of our Atlantic States. Cases must be seen at intervals—certainly as soon as warned by any return of the old symptoms—if they are to continue comfortable. My own practice is to treat cases of nasal sclerosis, for a period varying from four or five weeks, to twice as many months, until all important symptoms subside, and then instruct them to return at least once a month, or to report immediately if they suffer from symptoms of a "cold;" attacks of acute coryza, if allowed to run their course, having a most injurious effect on the course of the nasal disease. Of course, but a limited number of patients can be induced to follow so laborious a course of treatment, but the physician cannot conscientiously offer any better alternative. Nor can the victim of advanced intra-nasal sclerosis look forward, without treatment, in our climate, to a more favorable issue than impaired hearing, injured voice, bronchial disease, and much vitiated general health.

49 NORTH SEVENTEENTH ST., PHILADELPHIA.

LACERATIONS OF THE KIDNEY, WITH A NEPHRECTOMY.

BY HENRY H. MUDD, M.D.,

OF ST. LOUIS, MO.

A CONTUSION of the kidney sufficiently severe to produce hæmaturia is, I think, of frequent occurrence; but a contusion with a laceration extensive enough to result in extravasation of urine into the perinephritic space, and without external wound, is a comparatively rare injury.

The history of the following cases may be interesting, as illustrating the progress of such cases.

CASE I.—On October 24, 1875, William P., aged fifty-six years, a carpenter, fell a distance of six feet, striking with his right lumbar region

the end of a beam. The shock was profound and continued for thirty-six hours. Bloody urine was discharged from the bladder. There was no external evidence of injury until seven days after this time, when the discoloration of the skin indicated extravasated blood. On November 7th, fourteen days after the injury, a tumor was observed in the right loin. It rapidly increased during the 7th. I saw him, in consultation, on the evening of the 8th of November for the first time. His pulse was 130, skin cold, eructations constant, and vomiting frequent. The tumor was incised and a bloody fluid discharged. The cut in the sac was not sufficiently free, and the patient died November 14th.

The autopsy revealed a tear along the middle portion of the anterior surface of the kidney, which extended through one-half the substance, and there was a complete detachment of the lower third of the kidney. The bloody urine, which formed the tumor in the lumbar region, was retroperitoneal.

CASE II.—On January 10, 1883, J. C., a teamster, aged thirty years, fell from his wagon, striking on a pile of stones. Shock was profound and continued for five days. Urine was bloody for several days. There was no external wound or contusion. On the 15th of January a fluctuating tumor was observed, extending from the ilium to the ribs. This was rapidly absorbed, and had nearly disappeared by the 20th instant. In May he was entirely well.

In this case laceration of the kidney, sufficient to produce perinephritic effusion, was probable, but could not be certainly established.

CASE III.—J. C., aged five years, a bright, healthy boy, fell from a carriage May 16, 1888. He asserts that a wheel of the carriage passed over him. He was able to get up and walk, but was carried into a physician's office. I saw him an hour after the injury. Pulse weak; skin cool, but not moist; he was pale and nauseated. There were no abrasions about the right lumbar or hypochondriac region, though tenderness was marked in the anterior portion of his right side. The urine was quite red with blood, but no clots passed. The stain of blood gradually disappeared during the first three or four days. Shock was prolonged for nearly thirty-six hours, though not at any time dangerous. The temperature curve during the first fifteen days was irregular, but marked 98.2° to 101.8° as extremes. On the sixteenth day the temperature was normal, at which point it remained until the twenty-sixth day, except for a rise of a degree on the twentieth and twenty-first days. During this time, with temperature at or near normal, there developed a swelling in the right lumbar region, which rapidly increased during the twenty-third and twenty-fourth days. This fluctuating tumor was aspirated on the twenty-fifth day, and twelve ounces of clear straw-colored fluid were withdrawn. This fluid was apparently urine, and contained urea.

Fever developed on the 26th. The swelling again appeared, and it was incised and freely drained the same day. The incision for drainage was a free one, and the sac and kidney were well exposed.

The kidney formed part of the anterior wall of the sac. The peritoneum had been lifted forward. There was a superficial laceration of the kidney structure extending from the lower posterior border obliquely upward to the pelvis of the kidney. It seemed to disappear in the beginning of the ureter at this point. The kidney appeared a little enlarged.

It will be observed that the fluid tumor developed rapidly during the

two or three days preceding the incision and drainage. The urine which passed through the natural channel prior to the drainage of the right kidney was normal in character and quantity. There was a slight excess of mucus, but no albumin or blood, after the first few days. An accurate measurement of the quantity each day was not taken. The discharge through the lumbar incision was free, with a moderate fluctuation in quantity. It contained a few pus corpuscles and some excess of mucus, but otherwise appeared to be healthy urine. The discharge of urine from the left kidney was, during this time healthy, and averaged about ten ounces a day. The drainage tube was removed on the fifteenth day after the incision was made, but the flow continued uninterruptedly until nephrectomy was performed on July 5th, the fifty-first day after injury.

During this period of waiting, between the exploratory incision with drainage and the final operation of nephrectomy, the patient's general condition was good, except for the irregular, and sometimes violent fever. The temperature varied without apparent reason from normal to 104° , with an abrupt rise and fall. His appetite, with occasional interruptions, was good from the beginning to the end of his sickness. He, however, was losing flesh, and growing weaker. Nephrectomy was thought desirable, because: First, there seemed to be a complete obstruction of the ureter, as proven by the healthy urine passing through the bladder. Second, the urine from the cut was of low specific gravity, though abundant in quantity, and contained pus with an occasional granular tube cast; there was a slight increase in the size of the kidney, or a thickening about it. Third, the continued irregular fever was exhausting the patient. There was no burrowing of pus, no sinuses, except the short direct free one between the kidney and the external wound.

July 5, 1888, the patient, with a temperature of 103° , was subjected to nephrectomy. The first incision, made for exploration and drainage, was again opened and extended. This made our primary incision an oblique one, extending from the rib to the anterior portion of the crest of the ilium. This was further extended anteriorly along the margin of the ribs, so that the incision was a double one, with the angle of junction at the margin of the ribs and posteriorly. The kidney was enlarged and enveloped in a thickened capsule. It extended high up and forward under the liver, but it was exposed, and, without great difficulty, enucleated, and partially delivered before ligating the pedicle. The pedicle was ligated with a silk ligature, which included the ureter and the vessels. The temperature of the patient at the close of the operation was normal, but in eight hours it rose to 102° , though on the morning of the second day it again fell to 98.4° , and remained near that line until patient was well.

The progress toward recovery was uninterrupted. The wound, except in the track of the ligatures, healed by first intention. The ligatures came away on the thirty-third and thirty-fifth days. The patient gained health during this time; recovery now seems to be perfect. The urine passed through the bladder on the day of the incision, with drainage of the perinephritic sac, was six and one-fourth ounces. For the next thirteen days it averaged ten ounces; but there were two successive days when it dropped to six and seven ounces respectively. During the next succeeding ten days—that is, the next ten days preceding the extirpation

of the kidney—it averaged seven ounces. A gradual increase began after nephrectomy. During the ten days succeeding the operation the average secretion was 10.6 ounces. On October 10, 1888, he passed twenty ounces of urine, specific gravity 1020, no albumin or sugar or casts, and it contained eighteen grammes of urea. This specimen was examined by Dr. Bond, of Richmond, Ind.

In reviewing this history we find that the bladder was not at any time irritable. The secretion of urine for three days after the injury was bloody. Then followed twenty-three days during which the urine appeared in quantity and quality normal, except that there was an occasional excess of mucus. The sudden development of the fluid tumor in the lumbar region was, I suppose, due to an obstruction of the ureter at some point below the original injury. The steady flow of urine of low specific gravity from the side, and the absence of any disturbance of the bladder or of abnormal urine thus obtained, led me to believe the obstruction complete and probably permanent. It was, also, a good evidence of the healthy condition of the left kidney. There was no evidence in the clinical history to lead us to believe that the injury to the kidney or ureter was being repaired by nature's efforts.

The urine from the injured kidney uniformly contained albumin, and was of low specific gravity, with a limited amount of pus. Occasionally granular casts were formed. A permanent urinary fistula seemed probable, and the inflammation of the kidney, with the irregular fever, rendered delay dangerous. The drainage was good and the granulation surface exposed to the urine was very limited in extent. The kidney, when removed, was found to be inflamed and enlarged. It had numerous hard nodules developed in the cortex. I was not able by the specimen to demonstrate laceration of the ureter, though it is to be inferred.

The microscopic examination by Dr. Hartman showed that there was parenchymatous degeneration of the kidney, with opacity of the tissues and swelling. Hemorrhagic infarctions were numerous.

Nephrectomy for traumatism has been reported by Rawdon, Marvard, Brandt, Cartwright, Bruns,¹ and by De Forest Willard.

The first case here related might have been saved by a nephrectomy, if the condition had been properly diagnosticated. The second one recovered without positive evidence of extensive laceration of the kidney tissue. The third recovered after the removal of the kidney. The peritoneum was not torn in either case, though extensive laceration of the kidney substance was present in two. The presence of a chronic hydronephrosis, or pyonephrosis, would render a contusion or compression of the kidney more likely to be complicated by peritoneal injury.

¹ See Greig Smith's *Abdominal Surgery*, second edition, page 544.

Even if the peritoneum was uninjured, the retroperitoneal effusion from the laceration of such a kidney would excite a more immediate and violent inflammation.

It will be observed that in the two cases in which the history is complete, the fluid tumor in the lumbar region was not observed until the fifteenth and twenty-fourth days, respectively, after injury. Yet I think it probable that the point or points of injury, through which the urine escaped, were present from the beginning. The ureter was, however, permeable, and with but little resistance to the flow of urine, through its normal channel, the urine was very slow in dissecting its way into the perinephritic tissue.

Case II., which was under my observation from the beginning, showed at the end of the first week a slight thickening about the pelvis of the kidney, which remained small, difficult to outline, and rather hard in consistency until the twenty-second day. The late appearance of the tumors, their size and rapid development, indicate that it was not until the ureter was obstructed that the distensive force of the urine was sufficient to force its way into the connective tissue spaces and loosen the peritoneum from the abdominal wall, thus forming a sac as a reservoir for the urine. The obstruction of the ureter was probably made complete by the presence of a plug of mucus, or the deposit of some of the salts of the urine, from the vitiated fluid passing along this channel.

An ulceration in the pelvis of the kidney at some contused spot would hardly account for the sudden development of the tumors, unless it was also assumed that the ureter was obstructed simultaneously.

The quantity of the urine secreted by the injured kidney was, at first, no doubt limited. Its character changed as the tissue of the kidney became inflamed.

The effusion of urine into the perinephritic cellular tissue did not excite immediate local reaction. It was present in Case III., when the boy was free from fever; was up and about, moving around with moderate comfort. There was no decomposition of the fluid, and no marked inflammation of the walls of the sac when the fluid was drawn, and yet the larger part of the effusion had been present in the connective tissue for three days, and probably there had been some urine about the pelvis of the kidney in the connective tissue for three weeks.

The irregular, but continuous, fever which followed the free drainage and antiseptic conditions maintained in Case III., confirmed me in the opinion that the fever was largely due to the changes going on in the kidney structure. The microscopic examination corroborates this theory.

The clinician's history of such injuries is limited, but it appears to indicate that:

1st. A contusion, without serious lesion of the kidney when accompanied by a perinephritic hemorrhage, may present all of the immediate

diagnostic symptoms of rupture. On the other hand, a destructive laceration of the kidney substance may be slow in developing characteristic symptoms. It appears from the records that there is ample time for a thorough investigation of the individual case before operative interference is demanded. A rupture of the peritoneum must be an exceedingly rare complication in such injuries when the kidney is healthy.

2d. The dangerous conditions which may develop during the progress of such cases are shock, septicæmia, cystitis with extension of inflammation through the bladder to the other kidney, and nephritis of the injured organ. Suppressions of urine from both organs may develop during the presence of one or more of these conditions.

A destructive unilateral nephritis may develop in the contused organ, as was demonstrated in Case III., from whom I removed the kidney. This may occur even after the grosser lesion of the distinct tear in its substance has been repaired.

3d. Cuts and lacerations of the kidney substance will frequently heal readily, unless the ureter becomes obstructed; but a laceration in the pelvis of the kidney or the ureter is much more likely to leave an intractable fistula. An incision of the superficial parts with an inspection of the injured organ and free drainage is to be recommended before extirpation is resorted to. The efficiency of the compensatory action of the remaining healthy kidney seems to be well established by anatomical and clinical researches.

The lumbar incision offers many advantages, and is surely the safer method. It can be most readily converted into an incision for an entrance into the peritoneal cavity, and when so utilized it offers easy access to the kidney, better, perhaps, than does an incision in the median line.

EXAMINATION OF THE THROAT AND NOSE OF TWO THOUSAND CHILDREN TO DETERMINE THE FREQUENCY OF CERTAIN ABNORMAL CONDITIONS.

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IN February, 1888, Dr. Franklin Hooper, of Boston, read a paper before the Laryngological Section of the New York Academy of Medicine on adenoid growths in the vault of the pharynx. In the discussion which followed a great diversity of opinion prevailed as to the frequency of this disease in the children of this city and vicinity; some thinking

that as many as two or three per cent. were sufferers; while others, that, according to their experience, it was less than one per cent. One speaker believed it to be a rare disease.

To settle this point, which is certainly one of importance, I undertook, associated with Dr. Andrew H. Smith, the examination of these children, hoping that some definite opinion might be arrived at. While making the examination we took the opportunity of studying the condition of the other parts of interest in this region. Of the 2000 children, 955 were taken from the New York Juvenile Asylum, 176th Street and Tenth Avenue, by the kind permission of Mr. A. G. Agnew and Mr. E. M. Carpenter and Dr. Baruch, the attending physician; 645 from Grammar School No. 49, by permission of Mr. A. G. Agnew, and Mr. Pettigrew, the Principal; 200 from the Half Orphan Asylum in East 10th Street, and the remaining number from various sources.

In the entire number the following abnormal conditions were found:

Adenoid growths	60
Enlarged tonsils	270
Deviated septa	330
Spurs on septa	150
Hypertrophy of inferior turbinated bodies	260
Hypertrophy of middle turbinated bodies	161

This shows that 1231 were suffering from some anatomical abnormality, and usually with its accompanying symptoms of respiratory obstruction and catarrh. I will only give a short sketch of the observations made in each condition.

ADENOID GROWTHS, OR POST-NASAL DISEASE.

It has been shown that 60 suffered from this disease; of the entire number, 1292 were boys; 49 of whom had adenoid growths; 708 were girls, 11 having the disease, scarcely more than half in proportion to the number occurring in the boys. The ages varied from four to sixteen; few cases occurring under six years or over fourteen; the largest number being in children between eight and ten years, the frequency increasing toward puberty and decreasing after it. Condition of life and surroundings seem to have no effect on the occurrence of this disease. The children from Grammar School No. 49 and others, taken from the better classes, suffered equally with those in the asylums. Two classes of cases were observed sufficiently different in appearance and symptoms to allow of separate description.

In the first class the growths were irregular red masses, varying in size from that of a pea to that of a small cherry, and having a tense glistening appearance. They occupied chiefly the vault of the pharynx, and resembled the glandular tissue of this region much hypertrophied.

Thirty-five cases of this kind were observed. The growths were numerous, and hung down from the vault so as to fill the post-nasal space. They secreted a copious, thick yellow mucus, which hung from and around the growths, and in some cases large desiccated scabs covered the masses. The vocal sounds were thick and dead in character, and the nasal respiration much impaired at times, while at other times it seemed comparatively free. None had the high palatine arch and pigeon breast described by some observers. There was no case of decided deafness, although 10 had slight impairment of hearing. All these children would be classed as of the scrofulous type, and, I think, this disease is largely due to diphtheria, scarlet fever, and measles, occurring in such children, whose mucous membranes and glands, if once inflamed, show very little recuperative power. Throat complications are more severe in this class when suffering from diphtheria and scarlet fever; in place of returning to its natural condition, the mucous membrane remains swollen and inflamed, and after a short time that which was only the result of acute inflammation becomes organized tissue. This form, though differing anatomically from the other class of post-nasal growths, requires the same treatment.

Second Class.—The growths were small, pale pink or gray in color, and, in some cases, presented a fringed appearance; while, in others they were flat and round, and occurred singly or in clusters. 25 of this class were observed: 19 of which had only a moderate amount of the growth, confined chiefly to the vault and around the Eustachian tube. The remaining 6 were marked cases of the worst type of this disease. The growths were numerous, sessile, and long, and completely packed the post-nasal space, and extended in a chain-like formation down on the sides of the pharynx; and seemed continuous with the tonsils. The tonsils were hypertrophied in all the 6 cases. In 1 case not quite so severe as the others, the growths occupied the posterior margin of the septum and the margins of the posterior nares. All of these children had complete nasal obstruction, the "dead" voice, high palatine arch, small nostrils, and pigeon breast, and also the restless, irritable condition described by all writers on this subject. The 19 who were affected only in a moderate degree presented only moderate symptoms, and only 2 had impairment of hearing. All of the 6 severe cases had impaired hearing. One child could hear only the loudest sounds. The mucus secreted in these cases was white and frothy in character, and very copious. In this class the disease, I think, is often hereditary, and occurs in several members of the same family.

The examination of the post-nasal space was made chiefly with the mirror, and in the public institutions afforded a remarkable proof of the effect of fear and discipline on the reflexes. The children felt that they were carrying out a command, and although afraid, their discipline was

so good that they made no objection or efforts of resistance. This condition seemed to paralyze their faucial muscles, and allow the soft palate to hang away from the posterior pharyngeal wall, and thus gave an excellent view of the post-nasal space. This is in marked contrast to the condition in which the physician finds the child who comes to him in private practice, who, if averse to being examined, has little difficulty in showing that it is master of the situation.

In some cases the formation was such as to leave but little space between the soft palate and the posterior wall of the pharynx. In these cases, by causing the patient to say "ah," the soft palate was drawn upward and backward, and if the mirror was in readiness, when the palate relaxed and fell forward, a little anterior to its normal position, it allowed of a good momentary view. By repeating this once or twice a very satisfactory examination can be made. In twenty of the children the finger had to be used for diagnosis.

A good light is of the greatest importance, and I obtained the best views with a magnesium lamp, loaned me by Messrs. White & Son, of this city. But this could not be used for any length of time, as the light was so bright, that after examining eight or ten cases, I would be unable to see anything distinctly for at least an hour. For short examinations, however, where a bright light is of importance, nothing equals it.

HYPERTROPHY OF THE ANTERIOR PART OF THE INFERIOR TURBINATED BODIES.

This was confined chiefly to the mucous membrane. Only the most marked cases were noted; of these there were 260. In 102 the hypertrophy was bilateral and pressed the septum on both sides; in 140 it was unilateral, occurring chiefly on the left side, very large, often occluding the nostril and pressing the septum to the opposite side; in 18 cases the hypertrophy of the inferior and middle turbinated bones was so great as to occlude completely the nares, and on anterior rhinoscopic examination gave the appearance of two red masses filling the nasal cavities. If a diagnosis should be made relying only on the symptoms, without a rhinoscopic examination, they would all be pronounced cases of adenoid disease of the worst type. This shows how necessary it is to make a thorough examination in every case before introducing the post-nasal forceps. There are some surgeons who think mouth-breathing and dead voice sufficient to warrant them in operating without any further examination. As the result of this, I have several times seen the post-nasal space cleared of all its glandular tissue and not a little of the mucous membrane without any relief to the patient.

This condition of hypertrophy of the inferior turbinated bodies occurs

with equal frequency in males and females, but is rare in very young children. Colored children and Italians are remarkably free from it.

HYPERTROPHY OF MIDDLE TURBINATED BODIES.

161 had this condition; in 51 it was bilateral, and 110 unilateral. In 2 cases the mucous membrane and bone were so much enlarged that the tumor touched the floor of the naris. The bilateral cases presented chiefly an hypertrophy of the mucous membrane, but in the unilateral there was mostly a bony hypertrophy, and in 75 of these cases the cartilaginous septum was deviated to the opposite side; its concavity corresponding to the hypertrophied middle turbinated body. No child presented any evidence of reflex symptoms, and those cases of hay fever, reflex headache, and cough, which are relieved and sometimes cured by cauterization, or by removing part of the middle turbinated body, must be due to some condition of later development, as certainly, if hypertrophy or pressure alone could cause these reflex diseases, we ought to have had them with great frequency in these cases.

DEVIATED SEPTUM.

330 examples occurred; 270 presenting deviations of the cartilaginous, 50 of the bony septum, and 10 of both bone and cartilage. Of the cartilaginous deviations, 148 were to the right, and 122 to the left. Of the bony, 35 to the right, and 15 to the left. The bone and cartilage deviations were S-shaped. The cases of deviation were 50 per cent. more numerous in boys than in girls; 25 per cent. gave a history of injury, and the same number were due to hypertrophy of the middle turbinated bone. Only 10 deviations of the cartilage were observed in children under the age of seven, and they gave history of injury. In deviation of the bone, the children were all over eight. In 30 per cent. the obstruction was sufficient to impede respiration; and in all cases it increased the nasal discharge.

From these observations it would seem that deviation of the cartilage is rare under seven, and that when occurring, it is due to traumatic causes. It is well established that deviations of the septum occur in about 75 per cent. of adults examined, and this, of course, must be due to some cause which does not affect the very young. I think a large percentage is due to one of four causes:

First. Traumatism.

Second. Hypertrophy of middle turbinated body, or some other source of unilateral pressure.

Third. Hyperplasia from long-continued irritation.

Fourth. Difference in period of development of the bones of the face and septum.

SPUR ON SEPTUM.

Only the part of the septum visible through the anterior nares is considered under this heading. 150 were observed; 100 on the right side, and 50 on the left. The largest number were situated at the anterior inferior angle of the cartilage, close to the floor of the nares, and varied from one-quarter of an inch to an inch in length; were shelf-like in appearance, and concave on the under surface. 25 of the older children had a long ridge starting from the anterior inferior angle of the septum and running upward and backward from one to one and one-half inches. They were very large, often occluded the nasal passage of that side, and caused frequent attacks of epistaxis. I think spurs on the septum are often caused by slight injury to the nose, and, although small at first, grow rapidly.

ENLARGED TONSILS.

Only those presenting very considerable enlargement were noted. Of these, there were 270; 183 being of both tonsils, and 87 of one only. 160 cases were in males, and 110 in females. 7 cases were of extreme enlargement, preventing a view of the posterior wall of the pharynx and causing difficulty in introducing the finger into the post-nasal space. 6 cases had great impairment of hearing, and all breathed with the mouth open, to a greater or less extent, and had other symptoms of obstruction.

RÉSUMÉ.

I think we may fairly infer from these examinations that enlarged tonsils and adenoid growths are the only anatomical abnormalities that could be classed as belonging to very early life. The other abnormal conditions are acquired, usually after the age of six years, increasing rapidly with each succeeding year until puberty. All social classes are liable to them at about equal proportions, and at the same age. Males suffer more frequently than females, probably owing to greater exposure to the causes which produce catarrhal congestion and inflammation. In glandular organs it is but a step from congestion to hyperplasia, and an increased afflux of blood being once established, a slight irritation will serve to keep it up, and hypertrophy is the necessary result.

The increased number after six years seems to be due to several causes:

First. More children suffer after that age from scarlet fever, measles, diphtheria, whooping-cough, and a few other diseases of childhood which are specially liable to produce inflammatory conditions of the throat and nose.

Second. After this age children are more exposed to falls, blows, and accidents of various kinds. They are given more liberty to run about and take care of themselves, and mingle with other children. It is well known that the nose is a favorite place for the receipt of blows, great and small, which are incident to the pains and pleasures of the everyday life of most children.

Third. Climate certainly has an important influence on the mucous membranes. Persons coming from abroad to New York and other parts of America, soon complain of catarrhal symptoms of the throat and nose, which had been unknown to them before. On examination, the mucous membrane of the nares and throat is found congested and hypertrophied to a far greater extent than is observed in adults and children in England and on the continent.

Fourth. Hypertrophied tonsils and all forms of nasal obstruction produce catarrh by their interference with the respiration and circulation. It is also probable that they are the cause of the hypertrophied condition of the mucous membrane in many cases of the children examined.

It would seem that persons having the oversight of children should have them examined between the age of six and fourteen years, to ascertain the condition of the throat and nose. It is not the throat and nose alone which suffer from these abnormal conditions, but many other ailments, especially of the pulmonary, digestive, and nervous systems, can be traced to prolonged nasal obstruction and irritation.

ALVEOLAR SARCOMA OF TONSIL.

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MICROSCOPIST TO THE ARMY MEDICAL MUSEUM, WASHINGTON, D. C.

OCTOBER 20, 1887, Charles M., aged six years, suffering with slight soreness of the throat, was brought to Dr. P. R. Hardee, of Moriah, N. C., who upon examination found a small and insignificant-looking ulcer in the centre of the right tonsil; it was seemingly so trivial, and caused so little inconvenience, that no treatment was deemed necessary.

January 22, 1888, Dr. Hardee was again consulted; the examination this time showed considerable enlargement of the tonsil, unattended by inflammation, with no pain in deglutition, and the entire disappearance of the ulcer. Dr. Hardee, considering it a case of simple hypertrophy, treated it accordingly, prescribing tincture of iodine to be applied three or four times each day.

The patient was now visited daily until the 26th, no change being observed. On January 28th, the tonsil began to slough, forming a waxy concretion on the surface, and the breath became very offensive. Feb-

ruary 1st, the patient had a paroxysm of dyspnœa, and from this time on through the whole course of the disease these paroxysms occurred, especially during sleep, when it became necessary to awaken him.

Dr. Hardee now took the patient to Dr. Hunter McGuire, of Richmond, Virginia, who removed a small piece of the protruding tonsil, and sent it to the writer for diagnosis.

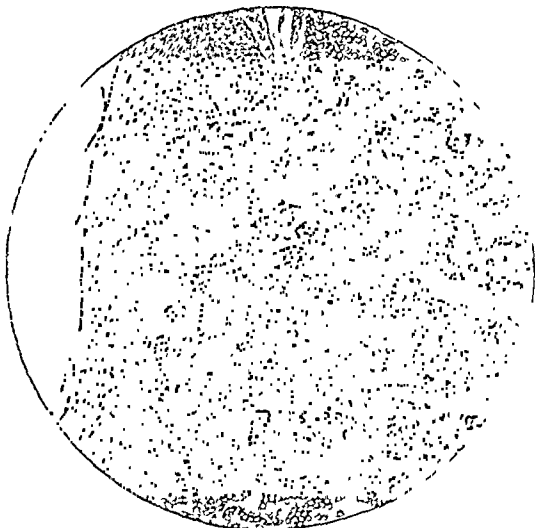
During February, the general condition of the patient remained good, but the appetite gradually failed until February 25th, when there was a respite lasting some days, and giving every indication of recovery.

During the progress of the disease three more such respites occurred, but were less marked than the first. By March the complexion had become cachectic. At no time was there any pain in deglutition, but during the latter stages of the disease the patient was unable to swallow anything but liquids owing to the size of the tumor, which externally was equal to that of the boy's fist.

May 6th, the tumor had involved the surrounding tissues, infiltrating the gums, and spreading across the soft palate to the opposite tonsil, and including it. After the gums became involved, frequent paroxysms of pain were experienced, which, however, were instantly relieved by painting with a five per cent. solution of cocaine. The child died June 4th. No post-mortem being allowed, it was not known whether the tumor gave metastases to the thoracic and abdominal viscera.

A microscopical examination of the small piece of tumor removed by Dr. McGuire revealed the following: Immediately below the epithelial layer covering the tonsil occur groups of round cells separated by a delicate reticulum of fibrous connective tissue (Fig. 1); the reticulum,

FIG. 1.

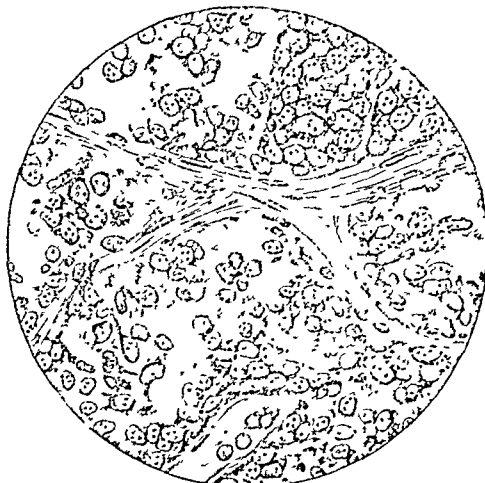


Section transverse to surface of mucous membrane of tonsil, showing groups of cells and reticulum. $\times 126$, drawn from photomicrograph.

besides separating the cells into groups, frequently extends as a fine mesh-work between the individual cells. The reticulum is composed of fine connective tissue fibres, with numerous spindle-cell nuclei. The round cells composing groups in the alveoli are double the size of the lymphoid

cells forming the normal structure of the tonsil, and are composed of a cell wall with finely granular protoplasmic contents, and contain from one to four nuclei, the nuclei containing one or more nucleoli. Separating the fibres of the reticulum, and frequently extending into the cell growths are numerous bloodvessels of varying sizes. The bloodvessels are without walls, and are usually outlined by a single layer of spindle cells (Fig. 2).

FIG. 2.



Same section, showing round cells with multiple nuclei, connective tissue reticulum, and bloodvessel without wall $\times 300$, drawn from photomicrograph.

In examining the reported cases of sarcoma of the tonsil, the following were found, from which a brief extract is given of the age and sex of patient, and character of the tumor.

Case I.—Patient, male, aged sixty-one years. Lympho-sarcoma of left tonsil, giving general constitutional infection. Moxon, *Trans. Path. Soc. London*, 1869, vol. xx. p. 369.

Case II.—Patient, male, aged seventeen years. Lympho-sarcoma of left tonsil, giving general constitutional infection; death from suffocation. Milani, *Gazetta Medica Italiana-Lombardi*, Milano, 1870, vol. xxx. pp. 17, 18.

Case III.—Patient, male, aged fifty-three years. Lympho-sarcoma of right tonsil. Brown, *Trans. Path. Soc. London*, 1878, vol. xxix.

Case IV.—Patient, male. Sarcoma of right tonsil; character of growth not given. Case of extirpation. Genzmer (Halle), *Verhandl. d. deutsch. Gesellsch. f. Chir.*, vii. 22-26. Berlin, 1879.

Case V.—Patient, male, aged sixty years. Spindle-cell sarcoma of left tonsil, giving general constitutional infection. No death reported. Weinlechner, *Wien. med. Presse*, 1882, xxiii. 1389.

Case VI.—Patient, male, aged sixty years. Spindle-cell sarcoma of left tonsil. Weinlechner, *Allg. Wien. med. Ztg.*, 1882, xxvii. 466.

Case VII.—Patient, female, aged seventy-four years. Round-cell sarcoma of right tonsil; first appearance two months previous to admission to hospital.

Death from general constitutional infection. West, *Trans. Path. Soc. London*, 1882, xxxiii. pp. 331-334.

Case VIII.—Patient aged seventeen years. Lympho-sarcoma of left tonsil including pharynx. Death in fifteen months from first appearance.

Case IX.—Patient aged seventeen years. Lympho-sarcoma of left tonsil. Tumor in five months grew to size of goose egg, and extended to right tonsil. Death in one year from first appearance.

Case X.—Patient, male, aged sixty-six years. Lympho-sarcoma of left tonsil. Case of extirpation, with no reported recurrence.

Case XI.—Patient, male, aged twenty-five years. Lympho-sarcoma of left tonsil. Tumor of rapid growth, spreading to right tonsil and abdominal organs.

Case XII.—Patient, male, aged sixty years. Lympho-sarcoma of left tonsil, giving general constitutional infection.

Case XIII.—Patient, female, aged thirty-five years. Lympho-sarcoma of right tonsil. Jardon, 8vo., Bonn., 1883.

Case XIV.—Patient, male, aged seventy-two years. Round-cell sarcoma of right tonsil. First appearance of tumor three months previous to admittance to hospital. Case of extirpation. Pollard, *Trans. Path. Soc. London*, 1886, vol. xxxvii. p. 221.

Case XV.—Patient, female, aged seventy-four years. Lympho-sarcoma of right tonsil. Death seven months from time of first appearance of tumor. Barker, *Trans. Path. Soc. London*, 1886, vol. xxxvii. p. 223.

Case XVI.—Patient, male, aged seventeen years. Round-cell sarcoma of left tonsil. Death from general constitutional infection eight months from time of first appearance of tumor.

Case XVII.—Patient, male, aged fifty years. Round-cell sarcoma of left tonsil. Croly, *Trans. Academy of Med. in Ireland*, pp. 161-164. Dublin, 1887.

Case XVIII.—Patient, female, aged sixty years. Round-cell sarcoma of left tonsil. Tumor of slow growth; two years' duration. Case of extirpation. Richardson, *Boston Med. and Surg. Journal*, 1888, vol. cxviii. No. 8.

ON A HITHERTO UNDESCRIBED NEUROSIS OF THE AURAL APPARATUS CLOSELY ALLIED TO CORYZA SYMPATHETICA.¹

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IN the course of an article on the "Respiratory Vasomotor Neuroses"² read in May, 1886,³ before the American Laryngological Association, I called attention to a condition of the aural apparatus closely akin to vasomotor coryza—a sort of "hay fever" of the ear, so to speak—

¹ Read before the American Laryngological Association at the first Triennial Congress of American Physicians and Surgeons, Sept. 18, 1888.

² See New York Medical Journal, Feb. 25, 1887, for a full statement of my views on this subject. See especially the article on "Neuroses of the Nose" in Wood's Reference Handbook of the Medical Sciences, vol. v. pp. 222 to 242.

and brought it forward in support of the doctrine which I hold concerning this class of neuro-vascular phenomena.

I have seen but one case of the affection I am about to describe, the details of which may be briefly given as follows:

Mrs. B., aged about forty-two, living in a distant city, came to Baltimore a few years ago, to consult me concerning a peculiar periodic affection of the ear, which had excited the interest of her physicians, but which had never been satisfactorily explained, and which came upon her every summer with such unerring regularity as to make life a burden to her for a definite portion of each recurring year.

Accustomed always to the good things of life, she had in later years been greatly reduced in circumstances and had experienced some of the acutest phases of domestic sorrow. She had met the call upon her mental and physical endurance with indomitable courage, but in the progress of time it had begun to tell upon her, and manifested itself in a weakened condition of the nervous system. She is not a nervous woman in the common acceptation of the term, but belongs to that class so common among our American women, which Beard, above all others, has so clearly differentiated from the purely hyperexcitable and hysterical.

The affection came on suddenly soon after her marriage in 1866, after a visit to the White Sulphur and Warm Springs in the mountains of West Virginia. There were no premonitory signs nor can she ascribe the affection or the suddenness of its onset to any particular cause. She could not say that she was in any remarkable degree affected by the sudden cooling and dampness of the atmosphere which often occur in those localities after the setting of the sun.

The disease commences, without premonitory symptoms, about the first day of June, with intolerable itching of the auditory canal. This may be preceded by a similar itching in the corresponding side of the throat in the region of the opening of the Eustachian tube; or both throat and ear may begin to itch at the same time. The itching is soon followed by swelling of the lining membrane along the whole length of the auditory canal. This diffuse swelling or engorgement rapidly increases until the meatus becomes nearly completely occluded. The surface of the swollen membrane is intensely sensitive to all sorts of local applications or irritants, but does not seem to be notably affected by the condition of the external atmosphere. This excessive irritability, which is particularly striking, prevents the employment of topical applications, but is occasionally relieved by the constant use of hot water.

Later on, symptoms of middle ear inflammation develop and give rise to deafness varying in degree. The Eustachian tube now becomes involved, as indicated by shooting pains from the ear to the throat in a line precisely corresponding to that taken by the tube in its passage to the pharynx, and also by direct rhinoscopic inspection.

During the period of swelling of the meatus it is impossible to get a view of the tympanum, but on one occasion, when the opportunity was afforded me of examining that structure, it was found slightly hyperæmic. The corresponding side of the nasal pharynx was also in a congested state.

The above symptoms last for a short while, when a profuse discharge

takes place from the auditory canal, which at the same time gives relief to the preceding symptoms. Some discharge also takes place into the throat, but this is inconspicuous in comparison with the external aural flux. She thinks that sometimes little swellings "like pimples or boils" are produced in the ear and that some of the discharge may come from them. A number of incisions into the swelling, made by her brother, a distinguished surgeon, have failed to detect the presence of pus, and, as they failed to give relief and seemed to aggravate the pain, were finally abandoned.

The affection only makes its appearance during the heated term and usually either in the month of June or the month of September. On several occasions, however, it has appeared in the months of July and August. It is always limited to one side, one ear being affected one summer and the other the next; or the same ear may alone suffer for several consecutive summers. During the winter-time she never suffers from ear trouble nor do her nose and throat show any signs of disease.

The almost daily paroxysms of the disease generally last for exactly four weeks, when they disappear as suddenly, and without premonition, as they came. One summer they passed away in two weeks.

She can, unfortunately, throw no light on the possible origin of the disorder, nor upon its exciting causes, except that the trouble, when once started, may be provoked or aggravated by various kinds of local irritants. During the paroxysms she becomes weak and irritable, and generally "out of sorts."

Nothing that she has ever taken for this trouble has in the slightest degree modified its course; but during last summer, which she spent at a well-known "hay fever resort," she was entirely free from her complaint for the first time in twenty-two years. The present summer (1888) she has spent on the seashore, chiefly at Narragansett Pier, and up to date (September 15th) has not had a return, though living in daily dread of its approach.

We have then a periodic affection coming on suddenly, only at a certain time of the year, characterized by a succession of paroxysms lasting a definite number of days and disappearing with the suddenness of its inception—an apparently inflammatory condition of the auditory canal (with possibly an occasional furuncular element), an inflamed or congested state of the cavity of the tympanum, and, finally, an Eustachian salpingitis—appearing with perfect regularity year after year and rebellious to all forms of seemingly appropriate treatment.

I call attention to it, in the first place, because it represents a diseased condition of the aural apparatus, as far as I know, hitherto unrecognized and undescribed. In the second place, the phenomena outlined above not only furnish additional evidence in favor of the doctrine which I have maintained concerning the rôle of the sympathetic in the so-called motor and neuro-vascular affections of the upper respiratory tract, but serve as a pregnant illustration of the law that "*the area in which the vasomotor reflexes occur will depend, other things being equal, on*

the seat of the local pathological process—on the localization of the area of peripheral excitability."

I have on several previous occasions spoken of certain conspicuous aural phenomena in connection with the sympathetic forms of coryza and directly related to them through the nervous system, prominent among which the enormously dilated and congested condition of the auricles and other vasomotor phenomena similar or analogous to those found in the external aural apparatus after section of the sympathetic in the neck. We have characteristic of the affection before us a group of symptoms referable to a distinctly circumscribed region which derives its vasomotor and trophic nerve supply in all probability directly through the otic ganglion. In sympathetic coryza the territory chiefly involved is the area in which the nerves from the spheno-palatine ganglion are distributed, whilst in the periodic affection of the conjunctiva analogous possibly to both the aural and nasopharyngeal affections the vasomotor supply is obtained through the ophthalmic.

The observation detailed above is, of course, an isolated one, and more extensive study of other cases must be made before we can arrive at its precise pathological significance. That it presents a striking analogy to certain neuro-vascular disturbances of the upper respiratory and ophthalmic tracts scarcely admits of a doubt. But even if not directly comparable or related to these latter, it is at least suggestive of a line of thought and method of observation by which our vision of this class of affections may be possibly broadened and which may lead to the establishment of the common kinship of a host of phenomena whose relationship has never been before suspected.

Above all, we should allow no opportunity to go by, however trivial and insignificant, to penetrate the veil which hides in darkness the pathology of the sympathetic nerve, and to approach more nearly the mysterious operations of that wizard force.

REVIEWS.

TREATISE ON THE DISEASES OF WOMEN. FOR THE USE OF STUDENTS AND PRACTITIONERS. By ALEXANDER J. C. SKENE, M.D., Professor of Gynecology in the Long Island College Hospital, Brooklyn, New York; formerly Professor of Gynecology in the New York Post-Graduate Medical School; Gynecologist to the Long Island College Hospital; President of the American Gynecological Society, 1887, etc. With two hundred and fifty-one engravings and nine chromo-lithographs. Pp. xiv. 966. New York: D. Appleton & Co., 1888.

THE appearance of another distinctively American treatise on gynecology is additional proof of the activity of our profession in this special branch. The present volume is essentially clinical in its scope, and bears worthy testimony to the ripe experience of a valued teacher. Originality in a special text-book is its highest recommendation, so that when we accord this quality to Dr. Skene's work we at once characterize it as an actual addition to gynecological literature. As a not unpleasing innovation, the reader will note that after every chapter several illustrative cases are introduced. This enables the author to dispense with a good deal of the ordinary trite matter on symptomatology, pathology, and treatment, and to present these topics in a strictly practical way. In this respect Dr. Skene wisely provides for the wants of the future medical student, whose instruction will unquestionably be largely clinical.

The general arrangement of the contents is as follows: First, congenital malformations; secondly, diseases of the external genitals (including injuries to the pelvic floor); then diseases and displacements of the uterus, affections of the ovaries, tubes, and perimetritic tissues; and, finally, diseases of the genito-urinary tract.

Chapter I., on "Methods of Observation," is terse and practical; the important subject of the bimanual examination is dismissed with briefer mention than it deserves, but the omission is atoned for by a clear and intelligible description of the method of introducing Sims's speculum. There is a most commendable brevity in the number and description of instruments used in diagnosis; at the same time we cannot but note the conspicuous absence of such useful ones as the depressor and dull-wire curette.

Chapters II. and III., which treat of arrest of development, are almost entirely clinical. The author includes under this head various disturbances of menstruation, some of which can hardly be said to result from actual non-development of the sexual organs. We doubt if all the cases cited are "illustrative" of the pathological condition described.

"I consider flexion of the uterus as a deformity," says the author, in beginning Chapter IV., "and it certainly belongs to that order of

pathological conditions." Acquired antelexion is touched upon rather lightly, slight reference being made to shortening of the utero-sacral ligaments in this connection. The obstructive theory of dysmenorrhœa is adopted. There is only a passing allusion to the distressing vesical symptoms, which are often of most importance to the patient. We hardly expected to find the antelexion pessary commended in a modern text-book, since it is now so seldom used.

Chapters V. and VI., on diseases of the external genitals and vagina, are followed by a comprehensive discussion of the important subject of injuries to the pelvic floor, which deserves careful study. The reader will be struck at once with the fact that the author has worked out this difficult subject independently, and, having thoroughly grasped it himself, has succeeded in presenting the gist of the matter in a clear and intelligible manner. The descriptions of the operations for repair of the various lesions are excellent, the accompanying illustrations (notably Plates I. and II.) being unlike most others, in that they really assist, instead of confusing, the reader.

Fourteen chapters (pages 171 to 422) are devoted to diseases of the uterus, the first two treating of inflammatory affections. The remarks on intra-uterine medications are judicious. Subinvolution is treated quite briefly in comparison with the descriptions of this condition in former text-books, and very properly, since it is merely a result of other pathological conditions, and in no sense deserves to be enrolled among inflammatory affections of the uterus. "I have never," says the author, "observed any symptoms which were specially characteristic of imperfect involution." We must confess that the following chapter (XII.) on sclerosis of the uterus somewhat injures the good impression produced by the one on subinvolution, since the student may not only be involved in confusion in his attempt to distinguish between these two conditions, but he has presented to him as a pathological state what is simply the end-result of endometritis or metritis, and, as the author himself admits, is unattended by definite symptoms or physical signs.

Chapter XIV., on laceration of the cervix, is somewhat disappointing, as it does not receive quite so much attention as we would expect in an American treatise on gynecology. However skilful a surgeon may become in using a special instrument devised by himself, he should not teach that it is the only one with which an operation may be rapidly and neatly performed. The reader may possibly elect to use the ordinary curved scissors in denuding the edges of a lacerated cervix, instead of the hawk-bill variety so highly commended by Dr. Skene, but he will find no description of the operation except the author's method. Many beginners would be glad to know how to introduce silver-wire sutures, as well as silk. We agree with him in deprecating the use of daily vaginal injections after trachelorrhaphy, but regard as of doubtful value the introduction of a tampon.

Displacements of the uterus are included in two chapters, under the head "dislocations"—a term more appropriate to general surgery than to gynecology. The section on the treatment of prolapsus contains only a brief reference to operative measures; kolporrhaphy the author has abandoned as a useless operation. His objections to stem pessaries of the Cutter variety are sound. "By a careful and judicious use of the ring and the tampon," he affirms, "aided by the T-bandage to support

the pelvic floor, one can accomplish nearly all that can be done by these artificial supports."

In discussing the treatment of retroversion we are glad to note that the author comes out strongly in favor of Foster's idea of the mechanical action of pessaries. We are happy to find at last a teacher of gynecology who does *not* believe, or pretend to believe, that a retroversion pessary elevates the fundus uteri by making direct pressure upon it (see Fig. 153, page 321). If Dr. Skene would apply the same principle to the treatment of antelexion, he would, perhaps, banish Thomas's and Graily Hewitt's instruments on grounds both theoretical and practical. Alexander's operation is not held in much favor. It is rather surprising that, while Polk's description of the operative treatment of retroversion with fixation is quoted at length (pages 324 to 328), no reference is made to hysterorrhaphy, an operation which deserves even more consideration, since there are at least a hundred successful cases on record, many having been reported by American surgeons.

The section on retroflexion is short and unsatisfactory. One looks in vain for wished-for details regarding the management of that *bête noir* of gynecologists—retroflexion with fixation.

We note as a praiseworthy new departure a separate chapter, entitled "Abuse of Pessaries," illustrated by several clinical cases.

Chapter XX., on hypertrophy of the cervix, contains some excellent cuts illustrating the author's method of operation (Figs. 166 to 170 inclusive). The following fifty pages, on fibroma of the uterus, embrace much that is of practical value, including a comprehensive section on electrolysis, from the pen of Dr. Jewett, of Brooklyn.

On page 398 we note as a minor blemish the use of the general term "carcinosis" as a substitute for "carcinoma." The chapter on cancer is marked by its fidelity to clinical facts, although the author occasionally confuses his pathology somewhat by describing scirrhus and medullary carcinoma and epithelioma of the cervix as if they were of equally frequent occurrence, whereas the latter is the growth which it is especially important for the student to recognize. The term "scirrhus" seems to be used rather loosely in some places. *A propos* of the differential diagnosis between so-called "erosions" and epithelioma, attention should have been called to the fact that the microscope constantly shows how indefinite is the line of demarcation between these two conditions; hence the practical deduction to amputate the entire cervix when there is any doubt in the mind of the operator. The section on treatment is good, except that a description of Freund's operation is superfluous in a recent text-book, it having been relegated to the heroic procedures of the past; a less condensed description of the different steps in vaginal hysterectomy would be more in order, an operation to which the author devotes but little space considering its importance and the amount of literature on the subject. The sections on cancer and sarcoma of the uterus exhibit clearly the different characteristics of the two conditions.

A separate chapter on the menopause (XXIII.) is another novelty in this work, which merits approval; its absence in text-books on gynecology has hitherto been noticeable. We have always held that the profession in general have a very imperfect knowledge of the "natural history of the menopause" (as Dr. Skene expresses it), and the influence of the climacteric upon morbid conditions of the pelvic organs. A number of illustrative cases are cited bearing on this subject.

Six chapters (XXIV. to XXIX.) are devoted to diseases of the ovaries, the first dealing with their anatomy and physiology, and the second with hyperæmia and acute and chronic oöphoritis. The writer prefers the hybrid term "ovaritis." Chapters XXVI. and XXVII. treat of neoplasms, which are divided as follows: "1. Those that are most frequently seen in practice, and that are amenable to surgical treatment. 2. Those that are rarely (?) met with, and that resist all kinds of surgical treatment, and tend, by their very nature, to a fatal termination." Under the former are included benign, under the latter malignant, neoplasms; the latter being, for some reason, not considered at all—a serious omission considering their frequency. That this division is rather a forced one is shown by the fact that the author is obliged to include under the first class fibromata and cysto-fibromata, which he acknowledges are "quite rare." The latter, by the way, should have been included under the same heading with the former. It is highly important to emphasize the distinction between fibro-cysts and *fibrous* cysts. The pathology of ovarian cysts is touched upon rather lightly, the clinical side of the subject being the author's strong point.

The chapter on ovariectomy, though a little narrow in its scope, is instructive for the beginner; most operators may differ from the author in regard to certain technical details, notably the use of the clamp and cautery as a substitute for the ligature. The description of the operation is clear and systematic. Reference should have been made to the unquestionably good practice, now becoming quite general, of withholding morphine entirely after ovariectomy and moving the bowels on the third day.

"Tubo-ovariectomy," as the author terms removal of the tubes and ovaries, is an operation which certainly presents peculiar difficulties apart from those encountered in removing an ovarian cyst. We find on pages 472 and 509 the promise of a separate discussion of this procedure, but do not note any allusion to it in the pages which follow.

Chapter XXX., on diseases of the tubes, is too brief, considering the importance of the subject; the writer handles it as if it were the least familiar of all, and his statements in regard to both pathology and treatment exhibit a lack of positive opinion which is not observed elsewhere. This subject is evidently not a favorite one with him, and is dismissed in as few words as possible.

Dr. Skene comes out squarely in favor of the familiar distinction between pelvic cellulitis and peritonitis, a separate chapter being devoted to each. It would be unprofitable to renew the long discussion of the identity and relative frequency of the two forms of pelvic inflammation. It will cause specialists no little surprise to find in the latest authority on gynecology no trace of the influence of this discussion, or any reference to the array of anatomical evidence presented by such a careful observer as Dr. Polk in regard to the true nature of pelvic indurations. "I think," observes our author, "that the so-called chronic cellulitis, recognized and treated as such by some authorities, is nothing more than the products of the inflammation which remain after the inflammation itself has subsided."

The subject of extra-uterine pregnancy is carefully excluded from the chapter on hæmatocele, the wisdom of which is not apparent, since the diagnosis of the former condition and its relation to internal hemorrhage are topics with which the general practitioner cannot be too familiar.

Ectopic gestation certainly deserves a separate chapter in every modern treatise on gynecology—its true place, instead of in text-books on obstetrics.

The author's excellent work in connection with diseases of the urinary tract is so well known that it is enough to state that the three hundred pages devoted to this subject form a monograph of exceptional value. Space does not allow us to particularize, but we commend as especially worthy of study the three chapters on organic diseases of the urethra, and the concluding one on urinary fistulæ, with its beautiful illustrations. The average reader may question whether the urethral glands are sufficiently important to deserve a separate chapter on their inflammatory conditions (a longer one than is allotted to diseases of the Fallopian tubes), but enthusiasm is always allowable in a discoverer, and it is interesting to note how far Dr. Skene has pushed his investigations of the pathology of these little known structures since he first called attention to them.

The concluding chapter of the book deals with gynecology as related to insanity in women, and is a long and able essay, embodying the results of the writer's experience as gynecologist to the King's County Insane Asylum. The description of his method of examining and treating insane patients is especially interesting.

As we stated at the outset, this work is to be regarded as a clinical one. Viewed from this standpoint (as it is the wish of its author that it should be) it is admirable. Whatever fault we may occasionally find with the strictly pathological portions, the sections on symptomatology, diagnosis, and treatment are almost invulnerable. It is easy for a critic to pick flaws in a monograph, which must of necessity contain ideas differing from those which he has imbibed in his own school of gynecology, but no one can read Dr. Skene's treatise without arriving at the conclusion that it is an honest book, the fruit of earnest, original work. In many respects it is the clearest and most practical one that has yet appeared in our language, and we prophesy for it a career of usefulness which will extend through many editions, and will, if possible, increase the respect which the profession entertain for the acquirements of its honored author.

H. C. C.

A MANUAL OF GENERAL PATHOLOGY, DESIGNED AS AN INTRODUCTION TO THE PRACTICE OF MEDICINE. By JOSEPH FRANK PAYNE, M.D. Oxon., F.R.C.P., late Fellow of Magdalen College, Oxford; Physician and Joint-lecturer on Pathological Anatomy at St. Thomas's Hospital, etc. With one hundred and fifty illustrations. 8vo. pp. 528. Philadelphia: Lea Brothers & Co., 1888.

THIS well-timed publication is made up of an introductory chapter of six pages, and of two parts, of which the first contains twenty-seven pages devoted to Processes of Disease; the second, twenty chapters, on the Causes of Disease. In addition, there is a short appendix, giving the methods for examination and recognition of bacteria, and an excellent index.

In turning over the leaves of a book on general pathology, the student instinctively stops at the chapter on inflammation, and his opinion will be decided by the manner in which this important subject is treated. Applying this rule to the work before us, the verdict is decidedly favorable, for the chapters—there are two—on inflammation give a terse and epigrammatic summary of the existing knowledge of this subject. The author emphasizes the fact that inflammation is always due to injury either mechanical, chemical, physical, or “if the effect of living organisms, what we may call, for the want of a better term, *vital*.” His definition of inflammation, however suggestive, is one that will not tax the memory of the student, for it is contained in the words “*inflammation is damage*.” The important rôle of leucocytes in removing noxious substances, whether animate or inanimate, is dwelt upon and illustrated by numerous examples, of which the most interesting are drawn from the observations of Metschnikoff. The imperfect repair of injuries in cases of leukæmia is attributed to the fact, observed by Cavafy and Bastian, that the leucocytes in that disease have lost their amœboid properties; but surely a portion of this imperfection is due to the profound anæmia (oligocythæmia rubra) that is also invariably present.

The chapter on fever presents an excellent summary of our present knowledge of the physiological regulation of body heat and its pathological aberrations.

In the section on qualitative variations of the blood, it is stated that “we have no means of measuring the quantity of blood in the body, and all we can measure is the density, which indicates the proportion of water.” The profession would be glad to know of any means, chemically applicable, by which the density of the blood can be ascertained. The want of such a test was expressed by the reviewer in an article published in Seguin’s *Archives of Medicine* in 1882, in the following words: “A desideratum in the diagnosis of anæmia is an instrument that will determine the specific gravity of small quantities (a drop or two) of blood.” Since that time he is not aware of any such instrument having been invented.

Exception may be taken to the statement on p. 271, that “in all chronic anæmias the average size of the corpuscles is diminished.” The author refers to the giant-disks of pernicious anæmia, but considers their number too small to increase the average diameter of the disks. This is certainly an open question, and there can be no doubt that an increase in the average diameter of the disks is the most plausible explanation of the increased percentage of hæmoglobin in such cases. In the next edition of this work the statement, on p. 274, that “idiopathic (or pernicious) anæmia chiefly involves defective production of corpuscles,” will probably be modified in accordance with the very recent researches of Hunter, who has determined that the essential pathological feature of this disease is an excessive destruction of blood.

The intricate subject of coagulation hardly receives the attention it deserves. There has always been a tendency to regard the question of coagulation as a physiological one, and it is always treated of in the text-books of that science. Such works have, in fact, very little to do with it, for the coagulation of albuminous fluids, whether it takes place within or without a cell-body, is invariably a form of necrosis.

The remarks upon the elimination of the poisons of specific diseases are very suggestive. The mode in which they make their exit from the

system, whether through the skin or intestinal canal, is sometimes regarded as a "providential arrangement intended to cure the disease; whereas, in reality, Providence would seem to be more concerned in perpetuating the specific virus." It certainly is an humbling fact to those who believe in the paramount importance of man and the providential care exercised in his behalf, that a much greater vitality seems to have been bestowed upon those organisms which are so often fatal to him.

In discussing immunity from disease, the author states that "innate or congenital immunity is shown in such facts as that the negro race never suffers from yellow fever." This affords an example of the repetition of statements of so-called authorities, and is completely disproved by the fact that, in the very recent epidemic of this disease in Florida, the negroes were attacked in large numbers.

The chapter on the specific morbid poisons will liberally repay careful perusal; in fact, it deserves repeated readings.

The chapter on ferments, while of great interest and well up to the times, is almost purely physiological.

The work, as a whole, has our heartiest commendation. Whether regarded as a text-book for the student, or as a work of reference for the scientific practitioner, it has no equal on the subject of which it treats in our language.

The beauty of the text, we regret to say, is marred by a number of typographical errors, although none of them, so far as we have observed, are perverse.

F. P. H.

THE LIFE INSURANCE EXAMINER. A PRACTICAL TREATISE UPON MEDICAL EXAMINATIONS FOR LIFE INSURANCE. By CHARLES F. STILLMAN, M.S., M.D., Medical Examiner for the Mutual Life Insurance Company for the General Agency of the City of New York, etc. 8vo. pp. 187. The Spectator Company: New York and Chicago, 1888.

THE business of life insurance has become one of great importance, involving enormous liabilities, which are assumed only after careful medical scrutiny of the applicant. The duties of the medical examiner are, therefore, of the most responsible character, requiring professional experience and skill and special training.

Within recent years life insurance companies, for the most part, oblige the examiner to answer all the questions (except those of a subordinate character) contained in the application for insurance. To do justice to the company, to the applicant, and to himself, the examiner should be conversant with life insurance formalities, the method of examination of the proposer, and the diseases relating to life insurance. It is the object of this volume to furnish information upon these subjects.

A classified list of questions put to applicants for life insurance, which are based upon the forms used by six of the prominent companies, and a series of "instructions to medical examiners," founded upon the experience of several large companies, constitute part first of the treatise.

Part second relates to the various questions to be considered in making an examination of the applicant, and the methods of making such

examination. The main divisions of the chapter are: identification, environment, physique, temperament, examination of the lungs, heart, and pulse, examination of the abdomen, and examination of the urine.

Part third furnishes a synopsis of the diseases relating to life insurance. The influence of heredity in its bearing on the chances of longevity of individuals is fully described, and standard rules are furnished to guide the examiner in estimating the significance of certain factors in connection with the transmission of disease. A brief description is given of diseases solely with reference to the bearing which they have upon the rejection, postponement, or acceptance of the applicant for insurance. The rules furnished are not intended to be absolute, but simply to aid the examiner in arriving at a correct judgment. An appendix, containing information upon the legal questions affecting the office and evidence of the medical examiner, instruction to agents, and a table of life insurance statistics, complete the volume.

The treatise represents the results of many years of practical experience in the department of life insurance, and compares favorably with similar works by Sieveking, Allen, Levan, and Taylor. As a guide, it will be invaluable to the physician who is preparing himself for the duties of medical examiner, and for reference after he has entered upon the work.

W. H. F.

DIE LUNGENSCHWINDSUCHT MIT BESONDERER RÜCKSICHT AUF DIE BEHANDLUNG DERSELBEN. Von DR. AUFRECHT, Oberarzt am Städtischen Krankenhause zu Magdeburg. 8vo. pp. 116. Magdeburg, 1887.

PULMONARY CONSUMPTION, WITH SPECIAL REFERENCE TO THE TREATMENT OF THE SAME. By DR. AUFRECHT, Chief Physician to the City Hospital at Magdeburg.

THE four discourses which comprise this volume were delivered by Dr. Aufrecht before the Medical Society of Magdeburg, in the spring of 1887. The general subject is treated under the following divisions: 1. The pathogenesis and etiology of pulmonary consumption; 2. The tubercle bacillus and miliary tuberculosis; 3. The symptomatology and prognosis of pulmonary consumption; and 4. The prophylaxis and therapeutics of pulmonary consumption.

For a number of years the tubercle bacillus has dominated the discussion of tuberculosis and overshadowed all the other important factors of this disease. The tendency has been to consider the medical treatment of this grave disorder as little better than fruitless until some certain specific is found against the parasite.

Dr. Aufrecht does not belong to the number of those who believe in the causal relation of the bacillus tuberculosis to phthisis. It is his purpose in these dissertations to show how the study of the prominent phenomena of this disease may be turned to useful account, and to prove by the results of a strict application of therapeutics to the characteristic stages of the disease—the early and subsequent stages—how unwarranted it is to rely solely upon general principles of treatment, or to remain inactive until some specific agent shall have been discovered to destroy the bacillus. In his opinion, under continued medical care,

supported by all the standard dietetic and therapeutic means at our disposal, especially if applied at a very early stage of the disease, pulmonary consumption, or, more precisely speaking, the lung-diseases leading thereto, affords a better prognosis than other chronic disorders.

It is not his intention to undervalue the meaning and importance of the discovery of the tubercle bacillus, but he avers that Koch has adduced conclusions, far-reaching in their influence upon society, which facts do not sufficiently warrant. If phthisis is engendered by the bacillus conveyed from person to person, then it follows that the strict isolation of the sick is an imperative necessity.

The curability of phthisis in general presents a strong criticism upon the correctness of the view of its infectious nature. If Koch's conclusions be adopted, all therapeutic measures are useless, and we must despair of curing the disease until a means shall have been discovered which shall destroy the parasite. The fact is, that the only possible therapeutics of phthisis must be based on clinical experience, and this the supporters of the parasitic origin of the disease are forced to employ until a specific has been found.

As an experimenter and able clinical teacher, Dr. Aufrecht brings to his task a ripe experience which enables him to unfold a difficult subject in a most instructive manner. His conservative views are based upon a careful study of Koch's investigations together with the results of an extended clinical experience, and are therefore entitled to more than ordinary consideration.

W. H. F.

A HAND-BOOK OF SURFACE ANATOMY AND LANDMARKS. By BERTRAM C. A. WINDLE, M.A., M.D. (Dublin), Professor of Anatomy in the Queen's College, Birmingham. 12mo. pp. xi. 134. London: H. K. Lewis, 1888.

IN view of the existence of Mr. Treves' *Surgical Applied Anatomy*, and of Mr. Holden's *Landmarks*, we cannot see any place for this book on *Surface Anatomy*. It is not so complete, either in the one direction or in the other, as either of the manuals we have mentioned. While it is good and true, it simply adds to the number of books in existence but adds nothing to our knowledge, and can hardly be said to add anything to the reputation of the author. Still, it is a healthy indication, in one respect, as it shows the increased attention which is paid to the anatomy of the exterior of the body, and, should it stimulate the author's students in Birmingham to careful study in this direction, it will be of value.

The author has given several pages to external anatomy in reference to the brain. We regret that he has chosen Reid's method in preference to any other, as it seems to be probably the least reliable, certainly for the fissure of Rolando, the most important of all the fissures of the brain at the present time. Moreover, in describing the fissure of Rolando, he does not give its angle (67°) with the middle line, one of the most important points about it. In fact his entire description of the fissures of Sylvius and of Rolando is vague and imperfect. He places the bregma on the biauricular line, which is too far back; and an error in

the reverse direction appears in the figure on the opposite page, where the bregma is placed too far in front of the biauricular line. In describing the lambda it is said, by a misprint which would puzzle a student very seriously, to be at the junction of the *coronal* and lambdoidal sutures, and in a similar manner that the falx "extends from the root of the nose along the frontal and *coronal* sutures to the external occipital protuberance." The use of the asterion and the pterion as measuring points is objectionable also, inasmuch as their positions are not readily ascertained on the exterior.

On the contrary, we note with pleasure his assertion that the apex of the lungs extends into the neck from one and a quarter to two inches, a fact very often forgotten in percussion of the apex; that the anterior border of the sterno-mastoid, which in a dissected subject seems to run in a straight course from the sternum to the mastoid, in a living subject curves anteriorly so far as completely to cover the carotid artery and its divisions. We notice, also, a few points of artistic anatomy which are introduced with advantage. But he should certainly have stated that the pointed process of the helix (to which Woolner and Darwin allude) is the result of development, and not at all of our evolution from ancestors with pointed ears.

W. W. K.

EPITOME OF DISEASES AND INJURIES OF THE EAR, WITH A CHAPTER ON NASO-PHARYNGEAL DISEASES CAUSING DEAFNESS. By W. R. H. STEWART, F.R.C.S., L.R.C.P. Edin., etc., Aural Surgeon to the Great Northern Central Hospital, London, etc. Diamond edition. Pp. 126. London: H. K. Lewis, 1888.

THE author of this work desires to present a book of reference on ear diseases, small enough to carry in the pocket. Its condensed form will enable the student to use it both in ward work in the hospital and as a refresher of memory before examination, and the busy practitioner will find it a ready reference in his daily work. It has twelve chapters, and supplies, in fact, an excellent syllabus of the condensation of the large works on the ear. We believe the book will be very useful to anyone interested in diseases and injuries of the ear. It is especially wise to direct attention to naso-pharyngeal diseases as a source of aural disease and deafness.

C. H. B.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

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UNDER THE CHARGE OF

FRANCIS H. WILLIAMS, M.D.,

ASSISTANT PROFESSOR OF THERAPEUTICS IN HARVARD UNIVERSITY.

CREOLIN.

This germicide is obtained from dry distillation of the best English coal; it is a dark brown, oily liquid, of a tarry odor. It dissolves in alcohol, ether, and chloroform, and forms, when mixed with water, a uniform slightly alkaline emulsion. Bacteriological tests show it to be a stronger antiseptic than carbolic acid.

It was used in the lying-in hospital in Munich under Prof. Winkel, by Dr. NIMOPOULOS, in one hundred and forty cases, which were compared with an equal number treated by corrosive sublimate (1:2000). The cases treated by creolin were divided into three groups; one set was treated with $\frac{1}{2}$ per cent. douches, one with 1 per cent., and one with 2 per cent. The creolin gave results fully as satisfactory as those from corrosive sublimate; it was found to be a better deodorizing agent than either carbolic acid or corrosive sublimate. —*Münchener medizinische Wochenschrift*, Nov. 6, 1888.

NEUENDÖRFER, of Vienna, contributes a paper to the *Med. Chir. Centralblatt*, No. 28, 1888, on "Creolin." He says that the chemical composition of creolin is unknown, even to the manufacturers themselves. It is true that creolin does not contain carbolic acid, but it is not safe to conclude that it is not poisonous. From experiments on animals Neuendörfer finds that intravenous injection has a poisonous effect: a dose of about grs. iv per pound of body-weight causes death. The symptoms are violent, general spasms, restlessness and pain, and profuse salivation. After death the heart, liver, and kidneys were surcharged with blood, but the spleen was pale, thin, and bloodless.

The danger of poisoning should not prevent the use of the drug, which, as an antiseptic, is preferable to carbolic acid, salicylic acid, iodoform, or corrosive sublimate. It may be applied to a wound in solutions containing from 1 to 5 parts per 1000 without fear of poisoning. Purulence is dried up by its

touch and it leaves merely a yellowish-green serum on the bandage.—*London Medical Record*, Aug. 20, 1888.

The use of this new antiseptic and deodorizer in certain diseases of the throat and nose, especially those which are accompanied by profuse and offensive secretion, diminishes the amount of the discharge and improves its character.

Local applications should be made by means of a cotton tampon about the size of the little finger, moistened in a solution of creolin and pressed carefully by means of a sound into the depressions of the diseased surface. The tampons are allowed to remain twenty minutes, during which time the patient experiences a slight burning sensation which soon subsides after removal of the application.

In addition to this treatment a nasal douche of dilute, warm salt solution is to be used two or three times daily.—*Therap. Monatsh.*, Oct. 1888.

PROBABLE CREOLIN POISONING.

Since the introduction of this substitute for carbolic acid, its use has spread rapidly, not only for external use as a disinfectant, but also as a douche for various cavities and mucous membranes, and even internally in diphtheria, phthisis, and diseases of the alimentary canal. As a disinfectant its solutions have about the same power as corresponding solutions of carbolic acid. It is thought to have several advantages over carbolic acid. On account of its weak alkaline reaction it does not act upon the skin and tissues, either of the patient or of the operator, as much as carbolic acid. Its odor is less unpleasant and less persistent, and it is said to be wholly without toxic properties. To this last assumption the case about to be cited justifies exception.

After delivery, a uterine douche of about two quarts of two per cent. creolin solution was given to a healthy primipara of twenty-seven. On the following day a douche of a quart of one per cent. creolin solution was given, and on the next day a douche morning and evening, the last at half-past six. At nine o'clock she suddenly became pale, cold, and vomited; the vomiting did not cease; perspiration supervened, and the patient died at eleven o'clock, in collapse and unconscious with a temperature of 96.7° F. The vomitus had a strong odor of creolin, and also the urine found in the bladder after death. Five hours before her death the patient was well and strong.—*Therapeutische Monatshefte*, Oct. 1888.

ANTIPYRIN IN THE NASAL PASSAGES.

DR. HINKEL has employed this drug in cases of acute coryza. He found that a solution of antipyrin possesses hæmostatic properties when sprayed into the nose, though inferior to cocaine. In about a four per cent. solution (grs. xvj to ʒj) it may be used upon the nasal mucous membrane with temporary relief to occlusion from engorgement of the turbinates, and with sedative effects upon irritable states, and is most effective where the element of irritation exceeds that of inflammation. It presents an advantage over cocaine in not producing local numbness and dryness, and, in the absence of the general stimulating properties of cocaine, causing sleeplessness, headache, etc. In cases, such as hay-fever, in which an agent for relief is used for

long periods, antipyrin as a nasal spray is less likely than cocaine to produce constitutional disturbance, or to lead to a "habit."

Antipyrin has the disadvantage of causing more or less severe smarting, and of being unequal to the relief of severe inflammation or extreme occlusion of the nares.

Its antiseptic and stimulating properties will probably make it serviceable as an application to fresh wounds and to granulations and ulcerations in the nasal chambers.

Combined with one-quarter to one-half per cent. of cocaine, it increases the local action of the latter, enabling it to be used in weaker solution.—*New York Medical Journal*, Oct. 20, 1888.

INCIDENTAL EFFECTS OF ANTIPYRIN.

Few of the modern antipyretics have found such a wide application as antipyrin, and scarcely any has such unpleasant or deleterious accompaniments; moreover, the cases in which its use causes dangerous symptoms are increasing in number.

DR. DRASCHE has reported the results of his own observations on more than three hundred cases, and has collected the reports of its incidental effects from the current literature. It has even been found to excite fever repeatedly in a case of rheumatism in a woman of fifty-two. Not infrequently the administration of antipyrin was followed by nausea and even vomiting, more often in women than in men; this action was not a local one, as it occurred in cases in which the drug was given by the rectum. In two children moderate doses were followed by hæmatemesis, convulsions, and death.

The eruption caused by antipyrin is of special interest; it occurs in about ten per cent. of the cases, chiefly in typhoid and phthisis, more often after continued use, though in some cases after a brief period and in minimum doses. It has, in exceptional cases, appeared after an interval of only five minutes or half an hour. As a rule, the exanthematous eruption remains from one to three days, but may be present for a week or more; it disappears when the drug is omitted and even when it is continued; and is quite independent of the amount given. The eruption is in the beginning chiefly local, but may spread over the whole body. It is most frequently erythematous in character, but may resemble measles, scarlet fever, and urticaria, and may occur even in different forms in the same individual at various times.

A rapid fall of temperature from antipyrin is not infrequently accompanied by profuse sweating which may continue for several hours; this, on readministration of the drug, may, or may not, return to a greater or less extent. In phthisis, after comparatively small doses, there may follow profuse and debilitating sweating.

In typhoid pneumonia there may also be a marked lowering of the blood pressure. The temperature may sink far below normal, and, on the other hand, may rise to even a higher point than before; there may be not only profuse perspiration but even rigors, and in some instances this may culminate in collapse and cyanosis. It may cause convulsions or narcotic symptoms, such as sleepiness, hebetude, and great depression. Severe coryza, with

abundant discharge of mucus, difficult breathing with frequent cough and expectoration, and profuse sweating may also be caused by it.

It is generally believed that antipyrin exerts no marked action on the kidneys, but slight degrees of retention, as well as incontinence, have been noticed, though quite rarely. The urine is somewhat diminished in quantity and its specific gravity is increased.

Antipyrin is certainly a drug which may excite disquieting and threatening symptoms as well as exert a toxic action, though their occurrence is exceptional. In general, it may be said that weak, debilitated subjects, those with a weak heart and children, are most apt to show susceptibility to the drug. In such patients small doses should be used at first, especially in typhoid and phthisis. The free use of this drug by the laity, without medical advice, should be discouraged.—*Wiener klinische Wochenschrift*, Oct. 11 and 18, 1888.

A marked case of increase of temperature following the use of antipyrin is reported by Dr. Hermann Müller in a patient ten years old, suffering from acute rheumatism. The rise caused by grs. x of antipyrin was from 103° to 105°, and at other times from 98.6° to 105° or more.

Several cases of a similar result from the use of salicylate of sodium are also reported.—*Schweizer Aerzte Correspondenz-Blatt*, Nov. 15, 1888.

PYRODIN, A NEW ANTIPYRETIC.

This new antipyretic has been extensively tried by DR. DRESCHFELD, of Manchester, on healthy persons and on patients suffering from various diseases, whilst DR. WILD has investigated its physiological action in the laboratory of Owens' College. It has been found to be a remedial agent of greater power than antipyrin, antifebrin, phenacetine, or any other of those chemical bodies which have been so much recommended of late for the reduction of temperature in pyrexial cases. Pyrodin is one of the numerous derivatives of coal tar, and, as its active ingredient, contains acetyl-phenyl-hydrozin. It is a white, crystalline powder, very sparingly soluble in cold water, and almost tasteless. Doses of eight or twelve grains on consecutive days produced no ill effects on healthy persons. Similar doses of from eight to twelve grains markedly lowered the temperature, in from two to four hours, in cases of pneumonia, scarlet fever, typhus, and typhoid fever; but occasionally toxic effects are produced, and this seems to be more particularly the case in typhoid fever and in cases of rheumatism.

These toxic effects are those observed in cases of aniline poisoning, and depend on the action of the drug on the blood, producing a hæmoglobinæmia, or even a destruction of the blood-disk. The skin becomes jaundiced, and aniline can be detected in the urine. Pyrodin should never be given in larger doses than twelve grains, and only once in eighteen or twenty-four hours, and it is not safe to continue its use for more than a few days. If either of these precautions are neglected, serious or even fatal symptoms may be rapidly induced. As the use of antipyrin and other products for lowering temperature and relieving pain is becoming very extensive, we have thought it especially incumbent on us to warn the profession against the dangerous character of this latest addition to our therapeutic resources, and never to exhibit it except with the greatest caution.—*Lancet*, Dec. 8, 1888.

[In the next issue of the *Lancet* the editors publish a further caution against the use of this drug except under the exercise of the greatest care.—ED.]

CARBOLIC ACID AND ITS ALLIES.

PROFESSOR CASH, of Aberdeen, introduced the discussion of this subject at the Annual Meeting of the British Medical Association by beginning with an explanation of the chemical relations of carbolic acid, hydroquinone, and resorcin; other bodies of the aromatic series, antipyrin and antifebrin, were then discussed both chemically and physiologically. He detailed some experiments in which he had reduced the normal temperature of pigeons by carbolic acid. Comparatively large doses produced a rapid fall of several degrees, followed by an immediate gradual rise to the normal, so that there was practically no period at which the temperature remained uniformly low. With antipyrin, on the other hand, a comparatively small dose produced a sudden fall of temperature, which remained uniformly low for a long period of time before the temperature rose to the normal. These experiments demonstrate clearly what has been found clinically, that antipyrin is a better and surer antipyretic than carbolic acid. But they show more than this; other antipyretic drugs are constantly being added to the armamentarium of the physician; some are soon discarded as useless, others remain permanently in use.

Professor Cash's experiments seem to indicate a means of accurately determining the antipyretic value of a drug before it is utilized in therapeutics.

In the discussion several instances of the antipyretic power of carbolic acid were brought forward, and the local anæsthetic action of this group of drugs was commented upon.—*British Medical Journal*, Nov. 3, 1888.

CHINOTOXIN.

HOPPE-SEYLER recommends this substance as a substitute for curare for physiological experiments; the dose may be more accurately adjusted.—*Centralblatt für die medicinischen Wissenschaften*, Nov. 17, 1888.

HYOSCINE.

DR. DORNBLÜTH has used the drug with success in the asylum at Brieg. He does not find that a tolerance to the drug is established by its continued use, although it was given in some cases more than one hundred times consecutively.—*Berliner klinische Wochenschrift*, Dec. 3, 1888.

The results of the use of the hydrochlorate of hyoscine in Professor Jolly's wards for mental diseases, in Strasburg, during the past year are given by DR. EUGENE KUG.

The 23 cases were chiefly of mania, melancholia, and dementia. In 80 per cent. of them five to seven hours' sleep was obtained; in 14 per cent. three to four hours, and in 5.2 per cent. the result was negative. The doses were from $\frac{1}{200}$ to $\frac{1}{150}$ grain. In 17 there were no serious symptoms; among the 6 others, 2, after a hypodermatic injection of $\frac{1}{100}$ to $\frac{1}{150}$ grain, became pale, complained of dizziness, heaviness in the head and indisposition, and there

was no sleep. In a paralytic, $\frac{1}{100}$ grain brought on a delirium which continued several hours without sleep. In the 3 others the quieting effects were much less conspicuous than were staggering, weakness, stammering, and hallucinations.

When the drug was given by the mouth, which was done with 88 patients, in about 3000 administrations, sleep followed after one or two hours, and continued for eight to ten hours in 82 per cent.; in 4.9 per cent. there was no hypnotic action. In 13 per cent. the results obtained were between these extremes.

Better results followed the administration by the mouth than when given subcutaneously; the action comes on more slowly but continues longer and is less dangerous; the dose is about twice as much— $\frac{1}{50}$ to $\frac{1}{20}$ grain. By whatever channel the drug is absorbed the system is soon accustomed to it, and it becomes necessary to increase the dose, sometimes up to $\frac{1}{20}$ grain a day. It is then advisable to give up its use and choose some other hypnotic for a few days. It is an inexpensive drug and it diminishes excessive perspiration.

In insomnia of patients with active motor disturbance, hyoscine seems to be the best hypnotic; with quiet but sleepless patients, chloral, amylhydrate, sulfonal, and paraldehyd are better.

Hyoscine excites undesirable symptoms more readily in nervous diseases not accompanied by cerebral affection.—*Berliner Klinische Wochenschrift*, Dec. 10, 1888.

PHYSIOLOGICAL AND THERAPEUTIC ACTION OF STROPHANTHUS.

DR. BLUMENAU, of St. Petersburg, finds that the action of strophanthus in slowing the heart is brought about through the vagus, and that it does not act if the vagi are cut, and that the slowed beats become rapid if the vagi are cut after the administration of the strophanthin. Also strophanthin does not slow the heart if atropine has been previously given, the peripheral inhibitory apparatus being thus paralyzed.

The increase in blood-pressure he does not regard as brought about by an action through the vaso-motor centre, as the rise in pressure occurs after section of the spinal cord.

He found the tincture serviceable in certain forms of cardiac disease. In one-half the cases there was diuresis, not only the liquid, but also the solids of the urine were increased; the diuretic action came on promptly after the administration of the drug—without the delay which occurs with digitalis.

In two cases it caused nausea, vomiting, diarrhœa, and headache; in no instance, even after long-continued use, was there any cumulative action.—*Berliner klinische Wochenschrift*, November, 1888.

PROFESSOR LEE and M. GLEY consider it probable that the action of strophanthus is to increase the activity of the heart's muscle, and that its action in constricting the bloodvessels is very great, probably through local action on the bloodvessels. They consider sparteine superior to strophanthus, and it has the advantage of being less toxic.

DUJARDIN-BEAUMETZ cautions the profession against the use of strophanthine, as there are several varieties; the preparations from the plant, rather than the active principles of both digitalis and strophanthus, should be chosen.—*L'Union Médicale*, November 15, 1888.

CARDIAC TONICS.

Digitalis still holds its place as the most powerful heart- tonic which we as yet possess, and the most permanent in its effects. But there are good reasons for the zealous efforts made of late years to find some other means of strengthening the heart's action in cases of failure of compensation.

Strophanthus has been on trial for over two years, and it is difficult to decide in exactly what cases of cardiac disease it is preferable to digitalis. Nearly all observers confirm Fraser's original statements without adding any important new facts. However, GUTTMANN maintains that it cannot compare, either as a heart drug or as a diuretic, with digitalis. On the other hand, it was used in Bamberger's clinic with success.—*Dublin Journal of Medical Science*, December, 1888.

MEDICINE.

UNDER THE CHARGE OF

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PUERPERAL ANÆMIA AND ITS TREATMENT WITH ARSENIC.

OSLER (*Boston Medical and Surgical Journal*, Nov. 8, 1888) says that of the twenty-one cases of pernicious anæmia of which he has notes, nine were in women, and in five of these the condition developed post partum. One of them he reports, by way of illustration. The patient began and continued to grow anæmic after confinement, could not sit up in bed without fainting, had constant vomiting and uncontrollable diarrhœa. Under the continued administration of Fowler's solution she steadily improved and became robust and of a good color, though iron had previously been given without any benefit whatever. The author then reviews the history of the employment of arsenic in pernicious anæmia, and calls attention to the fact that we do not fully understand the reason why the drug should be so useful in some cases and so useless in others. It certainly has often an effect in profound anæmia much resembling that of a specific; like that of quinine in ague, and iron in chlorosis. The initial dose should be five drops, increasing gradually to twenty or thirty drops three times a day. Puffiness of the eyelids, œdema above the eyebrows, vomiting or diarrhœa indicate that the drug should be suspended for a time. Sometimes arsenious acid is well borne, when Fowler's solution disagrees with the stomach. The point of greatest importance is that the medicine must be given for long periods and in increasing doses. In post-partum cases recovery is always slow, and it is well to intermit arsenic

for a few weeks; but it should be given at intervals for many months, even when the health is apparently reëstablished, as there is a well-recognized tendency to relapse in these cases.

WEIL'S DISEASE.

E. LANPHEAR (*Kansas City Medical Index*, November, 1888) describes a febrile disorder now prevailing at Kansas City, which he is inclined to believe may be identical with Weil's disease. He has seen seven cases of it, one of which ended fatally. The disease begins suddenly, usually with a severe chill; there is a sudden and alarming rise of temperature, persistent headache, moist and clean tongue, and a decided tendency to vomiting without much nausea. There are tenderness and some enlargement of the liver, and some jaundice is apt to be present. The urine is dark, strongly ammoniacal, and contains, in some cases, a slight amount of albumin. Herpes and purpuric spots occasionally appear. The characteristic feature of the disease is the severe and distressing pain which may develop in any of the muscles, but is most frequently confined to those of the back and calves. The fever is peculiar in that it begins with 104° to 106° F., and gradually diminishes in intensity without much remission; while the pulse keeps but 80 or 90, soft, and compressible, like the pulse of shock, and indicating a profound disturbance of the vasomotor centres.

The author considers the disease infectious. An autopsy on one of his cases revealed nothing characteristic. He discusses its diagnosis, showing that it has little in common with either typhoid or malarial fever, and is readily to be distinguished from cerebro-spinal meningitis. He obtained the best results therapeutically with aconite or gelsemium for the fever, or with salicylate of sodium, or with injections of sulphate of codeia into the body of the muscle to relieve the pain.

TREATMENT OF DIPHTHERIA BY ANTISEPTIC CAUTERIZATION.

GAUCHER (*L'Union Méd.*, November 18, 1888, p. 728) has previously recommended the treatment of diphtheritic angina by the application of concentrated carbolic acid mixed with camphor. He now details the results of this method in the hands of Dr. Dubousquet, who has used it in 81 cases, 30 of these being infants, 31 children three to twelve years old, and 21 persons older than this. 77 recovered and 4 died; the cause of death being the invasion of the larynx by the disease. He, himself, has treated 99 patients in this way, and with only 4 deaths. The applications should be made three or four times a day, and with sufficient force to remove completely the false membranes. He considers the simple statement of the figures a sufficient proof of the efficacy of the treatment.

THE MANAGEMENT OF PROGRESSING CEREBRAL HEMORRHAGE.

ANDREW H. SMITH (*New York Medical Record*, December 8, 1888, p. 666) says that when called to a case in which we have reason to believe hemorrhage is still going on within the cranium, but where symptoms of compression have not yet come on, the question arises whether there is no way in which the flow of blood can be arrested. Whatever is to be done must be

done at once. The provisions of nature which bring about an arrest of hemorrhage in other situations in the body are here inoperative, and the only limitation is when the brain has been compressed to such an extent that there is no more room into which blood can be poured. Ergot has been proposed as a means of checking the flow, since it constricts the arterioles. This very constriction, however, increases vascular pressure greatly, and may thus but increase the effusion of blood. It is, therefore, wholly contraindicated in cerebral hemorrhage. Purging, bleeding, and elevation of the head are designed to diminish the amount of blood within the cranium, but in proportion as they accomplish this they probably do more harm than good; for since we have finally to rely on pressure to stop the bleeding vessel, it is better to have this pressure exerted by blood within the vessels than by that extravasated into the brain substance. The more blood in the intra-cranial vessels, the less room for blood outside of them.

The author claims, therefore, that the correct treatment is to place the head lower than the body, and perhaps even to add to the congestion by the use of nitrite of amyl, which also lowers vascular tension and thus diminishes the *vis a tergo*. The symptoms of pressure would be brought on somewhat sooner by this method, but the effusion would be less, and in a half an hour a firm clot would have formed, allowing the head to be safely raised and the amyl nitrite withdrawn. Cold to the head is indicated, not to contract the intra-cranial vessels, but to favor the reduction of temperature, which hastens the formation of a firm clot.

OBSERVATIONS ON TWO CASES OF RAYNAUD'S DISEASE.

J. O. AFFLECK (*Brit. Med. Journ.*, Dec. 8, 1888, 1269) reports two cases of Raynaud's disease, both occurring in girls of sixteen years of age. In the first case the half of the left foot, and nearly all the toes of the right, were destroyed; the degree of destruction thus being much greater than is usually found in this disease. The second case was a much milder one; both hands being pale and painful, and portions of the fingers of the right hand finally sloughing. It is to be noted that there was an anomalous blood-supply in the right arm, there being no pulse to be found anywhere beyond the axilla. In discussing the pathology of the disease, the author calls attention to the deadly pallor, which is the first thing observed in typical cases. As it is, however, often absent even in genuine cases, and is a condition which may quickly pass off, it does not seem to offer a sufficient cause for the death of the part. Venous engorgement is a further stage of the disorder. The cause of this is not perfectly clear, but it is by no means probable that the stagnation is absolute, and that destruction of tissue would so quickly follow. We have not, therefore, a sufficient explanation for the development of gangrene, unless we assume the preëxistence of trophic defect or disturbance in the parts. The author believes that such a condition exists, and that the combination of this with the vascular changes is sufficient to produce the destruction of tissue. The severe neuralgias, which frequently show themselves before the symptoms of Raynaud's disease appear, support the supposition that trophic changes may exist, and this view was still further upheld in the first case reported by the discovery of extensive degenerative changes in the nerves of the foot which had been amputated.

ACETONIC ASTHMA.

J. PAWINSKI (*Berlin. klin. Wochenschr.*, December 10, 1888, 1004) reports the case of a woman, who, on the day after a night spent in dancing, was attacked by dyspnœa, palpitation, headache, vomiting, and great dimness of vision. Examination disclosed some enlargement of the heart, numerous râles in the lower parts of both lungs, and numerous finely granular casts in the urine. During the first portion of her stay in the hospital there was continual shortness of breath, which, on one occasion, suddenly became so excessive that venesection was performed with great relief. The urine passed shortly before the venesection was found to contain large amounts of acetone. From this time on the condition improved, and acetone was almost or quite absent from the urine until the last day of observation. On this day large amounts were again found, and the patient again suffered from a severe asthmatic attack. During a second sojourn in the hospital there was some degree of dyspnœa, with occasional asthmatic attacks, but acetone could only be found in small amounts. There developed, also, dyschromatopsia and unilateral amblyopia. The author discusses the possible connection of the asthma with nephritis or hysteria, but concludes that it was in all probability due to an acetonæmia. We are, therefore, justified in speaking of an acetonic asthma, analogous to the acetonic epilepsy of von Jaksch. The case can, with still greater right, be considered an instance of auto-intoxication, since so large amounts of acetone (1.44 grammes in 1000 grammes of urine) were found, yet without the existence of any fever. As is well known, acetone is frequently present in febrile conditions, though in small quantities.

After some discussion of the matter the author concludes that the ocular symptoms by no means necessarily indicated the presence of hysteria, but, like the asthma, are probably to be referred to acetonæmia. The fact that the patient died in an asthmatic attack some time after returning home is an additional proof of the absence of any hysterical element in her case. The author reviews the possible sources of acetone in the system, and says that this is the first case on record in which such large amounts of acetone have occurred in nephritis. A certain relation was observed between the albumin and acetone, since the more there was of the one present in the urine the less there was of the other. He assumes, therefore, that in this case, at least, the acetone may have been formed out of the albumin. It is remarkable that a similar relation has been observed between sugar and diacetic acid in diabetes. The author finally discusses the qualitative and quantitative methods for recognizing acetone in the urine, and describes a modification of the quantitative method of von Jaksch.

THE CONTAGION OF PNEUMONIA.

At the close of a long discussion of the contagiousness of pneumonia, NETTER draws the following conclusions (*Arch. Gén. de Méd.*, 1888, ii. 58): Acute pneumonia is a contagious transmissible affection. The contagion emanating from the sick persons owes its activity to specific pathogenic organisms, the pneumococci, which multiply in the pneumonic focus, and leave the body by different ways, but are especially abundant in the sputum. Contagion is possible long after the patient has recovered. One reason for this is

that the germ continues to live in the pneumonic patient for a long time after the disease has disappeared, and may be found in an active state in the mouth. Another reason is the resistance which the vitality of the germs offers to desiccation outside of the human body. This raises the question whether isolation of pneumonic patients should be practised. The author does not think this necessary, but would forbid the parents using linen that had been in use about the patient, staying continually in the room, or passing the night there. In hospital practice the pneumonic cases should be put in the smaller rooms, and not in the main ward. Especially should they be separated from cases of typhoid fever, measles, nephritis, diabetes, and acute affections of the respiratory tract. The sputum being the principal vehicle of contagion, should be disinfected. Linen and other articles should be disinfected in the same way as in the case of other contagious diseases. Disinfection of the oral cavity would certainly diminish very greatly the number of cases of pneumonia, by lessening the danger of relapse and the risk of infection to other individuals.

CONTRIBUTION TO THE STUDY OF THE INFLUENCE OF ALCOHOLISM ON THE DÉVELOPMENT OF PULMONARY TUBERCULOSIS AND OF ATROPHIC CIRRHOSIS OF THE LIVER.

ALISON (*Arch. Gén. de Méd.*, September, 1888, 280), after a careful statistical study, finds that tuberculosis is frequent among habitual consumers of alcohol following laborious occupations in the country. Out of 58 patients with tuberculosis, living in various country places, there were 18 who had taken alcoholic beverages to excess. All of the 18 led active lives, favoring perspiration, sudden chilling, and the production of catarrhal affections of the respiratory passages. Nearly all worked in the open air, and the passing from the heated air of the tavern to the fresh country air was an additional predisposing cause for the development of tuberculosis. The beverages generally used were beer, wine, and brandy, these being taken in considerable quantities and at different times throughout the day. The author thinks that alcohol further predisposes to tuberculosis by its constant irritation of the bronchial mucous membrane while being exhaled, and by the impairment of nutrition throughout the body.

The second portion of the author's investigation shows that occupation exerts a decided influence on the development of interstitial hepatitis, independently of other well-established causes depending on the quantity, nature, and mode of ingestion of alcoholic liquors. Statistics show that this disease is very rare in those following laborious occupations in the country, whether they are temperate or not, and much more uncommon than in those having sedentary pursuits. The conclusion from a therapeutic point of view is, that to those predisposed to organic affections of the liver walking and the undergoing of physical labor should be recommended.

HEART DISEASE AND ADONIDINE.

THOMAS OLIVER (*Lancet*, Nov. 24, 1888, 1012) says that a cardiac tonic must both improve the contractions of the heart-muscle, and must increase arterial tension if low, and thus promote the removal of water from the system

through the kidneys. Arterial tension may be increased in two ways: In the one, the drug increases the power of the heart, and more blood is sent into the vessels. In the other, it acts upon the vessels themselves, and contracts them.

The chief danger in heart disease is from reduced arterial tension, for the heart itself, as well as the systemic capillaries, suffers in consequence. The treatment of a case of heart disease depends not so much on the nature of the murmur, as on the condition of the left ventricle, the state of the arterial tension, and the existence of compensation. For all practical purposes digitalis answers very well, but it fails now and then. For some months the author has been trying adonidine in doses of one-sixth of a grain four times a day. He has used it principally in mitral and aortic regurgitation, in which it has given great relief. The drug is a cardiac tonic, with something of the sedative action on the heart which belladonna possesses. It gently raises arterial pressure, but has only slight diuretic action. The cases of aortic regurgitation in which it answers best, are those due to traumatic rupture of a valve, or to chronic aortitis, and where it has not arisen from rheumatic endocarditis.

PERU BALSAM IN LEUCOPLACIA AND OTHER EPITHELIAL THICKENINGS OF THE ORAL MUCOUS MEMBRANES.

After commenting on the various plans of treatment which have been recommended for *leucoplacia buccalis*, S. ROSENBERG (*Therap. Monatsh.*, October, 1888, 449) advocates the employment of balsam of Peru for this affection, as well as for mucous patches and other epithelial thickenings in the mouth. The drug should be gently painted on, or vigorously rubbed in, according to the degree of tenderness, and should not be expectorated with the saliva, the secretion of which it stimulates. He reports thirteen cases treated in this way, most of whom were benefited by it. He concludes that Peru balsam is of service in relieving pain dependent on tissue-alteration of the oral mucous membrane, and that it hastens the healing of ulceration there, and causes epithelial clouding to disappear; though in old leucoplasias a prolonged period of treatment is required.

ON THE ABSORPTION OF NOURISHMENT IN HEART DISEASE.

GRASSMAN (*Zeitschr. f. klin. Med.*, 1888, xviii. 183) has made a careful study of the condition of absorption of food in heart diseases; determining in several cases the chemical composition of the various substances ingested, and that of the urine and feces excreted. The results showed that in passive congestion of the circulation the absorption of the different articles of food was affected in very different degrees. It was found that that of the carbo-hydrates was very little or not at all disturbed. This result is striking, since von Mering has shown that the carbo-hydrates are chiefly if not exclusively taken up by the portal system, and this system must certainly suffer exceedingly in the congestion of heart disease. Müller has found, too, that even in the absence of bile or of the pancreatic secretion from the intestine, or in amyloid degeneration of it, the absorption of the carbo-hydrates is but little impaired.

It would appear, therefore, that whatever the nature of the digestive dis-

turbance, the assimilation of this sort of nourishment is least of all affected. The author further found that in heart disease the absorption of nitrogenous food was also little disturbed, even when ascites and œdema were rapidly increasing. It was, however, discovered that the power to take up fat was very greatly diminished, an average of eighteen per cent. of the fat eaten appearing again in the feces; or more than ten per cent. in excess of what should be evacuated by healthy individuals. The degree of congestion does not seem to have much influence on the lack of absorption, and it is not so much the congestion itself which is the cause of the trouble, as the chronic alteration of the intestinal mucous membrane which the heart affection has produced. As the fat in the feces was always properly reduced, at least two-thirds of it being in the form of fatty acids, it would seem that there was not so much an impaired digestion of fat as a want of its absorption.

THE TREATMENT OF DILATATION OF THE STOMACH.

OTT (*Deutsch. med. Wochenschr.*, September 27, 1888, 807) says that the treatment of dilatation of the stomach must always depend on the cause of the affection, since there is no treatment applicable to all cases. The cause should be removed when possible, but when this is a stenosis, we can only treat the disturbed chemical processes of digestion, and in this way often cure the ectasia. The chief means to this end is the systematic lavage of the stomach. In carcinomatous ectasia this procedure is very useful, combined with the administration of peptone preparations. In dilatation from hyperectasia unlimited supplies of water cannot be allowed, and the intense thirst must be quenched by iced milk or pieces of ice. Massage, properly carried out, is a very useful measure. Electricity, as faradization, should also be employed, one pole over the left hypochondrium, and the other movable from the cardia to the pylorus. The current should be rather strong, and the *séance* last five minutes. The administration of Carlsbad water is also a very useful adjunct, since it diminishes the secretion of hydrochloric acid. Given in the morning, it can take the place of the lavage, which would otherwise be necessitated at this time, and this procedure may be reserved for evening, instead of being applied twice daily.

ACUTE INTESTINAL OCCLUSION.

COPPENS (*Archiv. Gén. de Méd.*, October, 1888, 513) sums up his report of a case of intestinal occlusion with discussion of symptoms, as follows:

1. Of all the varieties of pseudo-occlusion, peritonitis from perforation is the only one which it is possible to confound with acute intestinal occlusion; an error which has been often committed.

2. The diagnosis between these two affections is of course necessary before treatment can be thought of.

3. This diagnosis is possible; the most important diagnostic signs being drawn from the examination of the temperature, and from the degree and method of onset of the meteorism.

4. Contrary to what has been hitherto maintained, it is in peritonitis, and not in occlusion, that the earliest and most extreme degree of distention of the abdomen is met with.

5. Though it is possible to distinguish intestinal occlusion from pseudo-occlusion, it is almost always impossible in the former to know with what variety we have to do. To determine this, however, is of almost no importance so far as treatment is concerned.

6. It is dangerous in intestinal occlusion to resort too long to palliative means. Surgical intervention should be made early, under the conditions which the author describes in the body of his paper.

7. The abdominal incision ought to be median, and sufficiently large to permit of rapidity and ease in exploration.

THE ENLARGEMENT OF THE LIVER IN RICKETS.

HOBGEN (*Birmingham Med. Rev.*, August, 1888) calls attention to the frequency of enlargement of the liver in rickets. A histological study of the liver of well-marked cases showed an increase of the connective tissue, sometimes combined with a fatty infiltration of the hepatic cells. In every case there was a remarkably definite though not excessive hyperplasia of the interlobular connective tissue. There was also a small-celled infiltration at the periphery of the lobules, and in some sections a thickening of the bile-ducts. The author thinks this a distinct form of cirrhosis in children, resembling hypertrophic cirrhosis. It differs from that of syphilis in the absence of intra-lobular growth, and from that of alcoholism in the greater coarseness of the process in the latter. Chronic gastro-intestinal catarrh (a constant early symptom of rickets), leading to involvement of the bile ducts and consequent chronic incomplete biliary obstruction, is possibly the cause of the interstitial hepatitis described.

CONTRIBUTION TO THE STUDY OF SPONTANEOUS RUPTURE OF THE SPLEEN.

BARRALLIER (*Arch. Gén. de Méd.*, Sept. 1888, 299) reports two cases of rupture of the spleen; both of them confirmed by autopsy, and in both of which the enlargement was of malarial origin. After discussing at length the symptoms of this accident, and the way in which they are caused, he concludes that ruptures of the spleen may be produced in the first stages of malarial infection without exterior violence, and simply by a sudden and great hyperæmia of the organ. This hyperæmia, which exhibits no premonitory symptom, and occasions a rapidly fatal lesion, may be considered the expression of a special pernicious state, which may be called splenorrhagic pernicious fever.

TREATMENT OF ASCITES BY FARADIZATION OF THE ABDOMINAL WALLS.

M. MURET (*Rev. de Méd.*, Sept. 1888, 719) passes in review some of the cases already published, in which faradization was of benefit in ascites. Among the causes of the dropsy in these cases may be mentioned cancer of the liver, cirrhosis, cardiac affections, chronic peritonitis, malaria, etc.

He adds, then, two new cases to the list: The first of these was an instance of chronic peritonitis, probably tubercular. After treatment for seven months the patient left the hospital strong and well, without trace of abdominal effusion. The author believes that the disappearance of fluid is fairly to be attributed in large part to the use of faradization.

The second case was one of ascites from tumor of the spleen of unknown nature. After various diuretics had been employed without much success, excellent results were obtained by faradization of the abdominal walls, commenced after aspiration had been performed. Diuresis was increased to such an extent that a second aspiration was not needed for six weeks, instead of every five days as previously. Later, however, the fluid increased in quantity in spite of the use of electricity. The author discusses very fully the possible explanation of the cause of the absorption of fluid, and concludes that at present we cannot decide in what way the treatment acts.

PERIODIC INTERMITTENT ALBUMINURIA.

P. MERKLEN (*Arch. Gén. de Méd.*, August, 1888, 140) describes three cases in which albuminuria appeared only in the daytime, and was entirely absent while the patients were kept at rest in bed; while food, nervous excitement, and exposure to cold were without influence. He concludes that the regular intermittence of albuminuria, the integrity of the general health, and the usually complete recovery are in favor of the view that this singular affection is simply functional; a sort of repeated renal congestion. This would be always induced by the erect station, or by muscular exercise, owing to an habitually atonic state of the circulatory system. In regard to the exact mechanism of albuminuria, it is supposable that the disturbed renal circulation modifies the glomerular epithelium in such a manner that temporary transudation of albumin is permitted. As soon as the renal circulation assumes its normal condition the vitality and impermeability of the epithelium are restored. Why the albuminuria should cease at about 6 P. M., before the hour of retiring, is by no means clear. The prognosis is good, except that repeated functional disorder may pave the way for some organic kidney affection. This has, however, but rarely occurred. It is well to bear in mind that this intermittent albuminuria is carefully to be distinguished from that of the early stages of interstitial nephritis. The latter should be easily distinguished by the concomitant symptoms, though they have been frequently confounded.

SURGERY.

UNDER THE CHARGE OF

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SURGERY OF THE LUNG AND THORAX.

Within the last few months a number of important papers upon pulmonary surgery have appeared, showing an increasing tendency to apply modern surgical methods to the thoracic viscera.

Pulmonary abscesses are rare sequelæ to acute pneumonia, but occasionally after recovery from an advanced stage of the acute disease the clinical signs of such abscesses may be found. They are of grave significance, for all their ways of healing, whether by absorption, as by breaking into a bronchus, or into the pleura, the pericardium, or the liver, or externally, are dangerous. This has led surgeons to attempt to evacuate them by thoracentesis, which is easier than in the case of tuberculous vomica, for they are generally surrounded by healthy tissue, nearer the base of the lung and more within reach, and probably, also, the patient is in a better state to stand operation. Out of ten cases cited between 1880 and 1888 (*Rev. de Méd.*, Aug. 1888) there was complete cure in four (under Rüneberg, Queifs, Rohden, and Quincke); cure with a small fistula in three (under Finne, Bacchini, and Fenger); and death in three in whom there was a gangrenous cavity occupying nearly the whole of the lower lobe of the lung (under Sutton, Smith, and Spillman), and who were profited temporarily by the operation, but died of gradual exhaustion after it. These were all cases of abscess following acute pneumonia. The diagnosis of the exact position is often difficult, and an exploratory puncture is of value. Adherence of the two layers of the pleura before opening the abscess is also of value. RÜNEBERG (*Deutsch Arch. für klin. Med.*, p. 93) advises the actual cautery or stitches to aid in producing adhesion.

Spillman and Haushalter operated on the fifteenth day of an acute pneumonia, and withdrew a little fetid pus, and injected iodoform and glycerine. The patient died, and at the autopsy a small abscess was found which had not been hit by the needle. In England the more common method is to open the abscess freely and wash out with an antiseptic. When proper, a slow entry into the lung by thermo-cautery, and the subsequent insufflation of antiseptic powders. (*The Practitioner*, Dec. 1888.)

QUINCKE (*Berlin. klin. Wochenschrift*) reports two cases of pneumonotomy. In both access was gained to the lung tissue by the gradual destruction of the overlying tissues by chloride of zinc paste. In one an abscess cavity was reached in this way; in the other no pus was found. Both recovered. A case recently occurred in New York which showed the difficulty of reaching pus in certain conditions even when its presence has been ascertained by the needle. On the resection of a rib at the point where a puncture had shown pus, the pleura was opened, but nothing but blood was obtained; a second rib was resected with the same result; and it was only after resection of a third rib that the abscess cavity was opened and drained. (*New York Med. Journ.*, Dec. 8, 1888.)

MR. HOWARD MARSH (*The British Medical Journal*, Oct. 13, 1888) concludes that while in recent cases the aspirator may be useful, yet that generally it is better to make an incision and establish free drainage. He agrees with Mr. Godlee, that an opening at the lowest part of the chest, where the cavity is soonest obliterated, is less efficient for drainage than one placed higher, opposite the part of the empyema, which is the last to close. In cases in which the empyema is chronic, and in which suppuration continues after a free opening has been made, Estlander's operation, consisting of a removal of a portion of two or more of the ribs, should be performed. It is valuable, first, by permitting the insertion of the finger to break down adhesions and evacuate secondary collections of pus; next, by aiding in the approximation

of the thoracic walls in those cases in which, the lungs being bound down, the cavity cannot close on account of the rigidity of the parietes.

MR. PRIDGIN TEALE (*Ibid.*) formulates the following views relative to the surgery of the chest: The inrush of air at the time of operation is harmful because it reduces the power of the thoracic wall and inspiration; when life is thus threatened the problem will be to provide adequate drainage and at the same time prevent the inrush of air; the region of the diaphragm is that where abscesses amenable to surgical treatment most frequently occur; they can be more safely opened through the lower angle of the thorax, if there is dulness there, than through the abdomen; antiseptic washing is of value during the early period but unnecessary later; the excision of ribs is reserved for special cases.

SIR SPENCER WELLS reported (*Ibid.*) a case of abscess of the lung operated on forty years ago, the patient being still alive and well. In this case the abscess and resulting fistula were in the right axilla.

In a very elaborate paper in the *Edinburgh Medical Journal* for Dec. 1888, DR. J. W. B. HODSDON inquires into the mechanism of the cure of empyema, and the causes which produce failure to cure. In favorable cases the cavity is closed in the following manner:

The lung is expanded intermittingly to a slight extent during normal breathing, markedly so by forced expiration and coughing, and these forces are aided by blood-pressure, which is an important factor; air is forced out at the opening during expiration, and is to some extent prevented entering by the falling together of the edges of the wound, or by the valvular action of the dressings, in consequence of which, and also of the possible absorption of a small quantity of air between the times of dressing, if it be not necessary to do so frequently, a degree of negative pressure is produced in the cavity, which is, of course, also favorable to expansion. As the lung is being expanded by these means, the formation of adhesions between the two pleural surfaces serves to maintain it in contact with the chest-wall, which has, in proportion to its elasticity, been falling in to meet the lung, while the diaphragm, by rising up and becoming adherent, and the mediastinum, by returning to its normal position as expansion progresses, also assist in the closure of the cavity. Failure on the part of the walls of the empyema to come together generally occurs in adults. The circumstances which give rise to it are related to the lung and to the chest-wall.

1. *As to the lung.* It may have lost its elasticity in consequence of inflammatory changes in its structure, producing fibroid induration and other conditions which render it wholly or partially incapable of expansion. By far the most common cause, however, although the two may be combined, is the fixing of the lung by dense adhesions and the coating of its surface with a thick layer of lymphoid material. If we examine the thorax in such a case, we find the pleura enormously thickened, the lung adherent, and partially or totally incapable of expansion, lying posteriorly in the hollow formed by the angles of the ribs, and constituting part of the wall of an abscess cavity lined with granulations. This state of matters usually arises from delay in opening, but in patients the subject of tubercle, or who have a tubercular tendency, it may occur at a comparatively early period, and is a strong argument in favor of early opening in such individuals. Then, again, septicity and tension in

consequence of bad drainage, favor a continuance of suppuration, which, in its turn, conduces to thickening of the pleuræ and hindrance to expansion.

2. *With regard to the chest-wall* one need only remark that the cause of failure on its part is rigidity, which is, of course, marked in proportion to the age of the patient; and that while the ribs do fall in to a certain extent in all cases, this occurs only to a satisfactory extent in young persons. The diaphragm and mediastinum fail to do good, in consequence of want of expansion of the lung producing a sufficient degree of negative pressure in the pleural cavity to enable the former to rise up or the latter to return to its normal position.

There is a class of cases between these two which we very frequently meet, and which, perhaps, most commonly come under the care of the surgeon. They are the cases in which expansion of the lung, falling in of the chest-wall, and rising up of the diaphragm take place to a certain extent; but an obstinate fistulous opening remains, and the patient is exposed to all the risks of prolonged suppuration. This condition is most prone to occur where opening has been delayed, septicity is present, and drainage has been imperfect. We find in such cases the lung unequally expanded throughout, adherent to the chest-wall where expansion has taken place; and where this has failed an abscess cavity exists, or there may be several such abscesses communicating with one another, or with the external wound by narrow orifices. This state of matters is due to portions of the lung being incapable of expansion from changes in its structure, and to thickening of the pleura over it, or to both of these conditions.

THE RADICAL CURE OF FEMORAL HERNIA.

The literature of the radical cure of hernia, while becoming most extensive, is markedly deficient as regards operative details applicable to the femoral variety. Macewen, Barker and others dismiss the subject in a few words. DR. H. W. CUSHING describes (*The Boston Med. and Surg. Journal*, December 6, 1888) the method he employed in the case of a boy, aged twelve years, with an irreducible femoral hernia of four years standing. The sac was lightly adherent to the edge of the saphenous opening. By dissecting through the subjacent tissues between the spermatic cord and the outer pillar of the external abdominal ring, the sac was exposed as it entered the crural ring. It could then be freed from within outward, by general traction, manipulation, and dissection; and after division of the adhesions to the saphenous opening became perfectly reducible, leaving the femoral vein exposed throughout this entire distance. The sac was now opened, and with scissors and scalpel the omental adhesions to its inner surface were, with considerable difficulty, divided. The omental mass, measuring two inches by one and one-half by one and one-half, was then ligated, cut away, and its stump pushed back into the peritoneal cavity, leaving the sac resting free and empty in the crural ring. A continuous suture closed the sac, which was then folded on itself and fixed within the abdomen, *à la* Macewen. The suture effecting this reduction passed through the crural canal and upward to the surface through the transversalis fascia, conjoined tendon, and aponeurosis of the external oblique. The crural ring was next closed by suturing Poupart's ligament with a "quilted suture"

to the pubic portion of the fascia lata and the fascia covering the pectineus muscle, the femoral vein being protected with a retractor. When secured the opening apparently became impervious, the folded sac forming a pad, which was firmly fixed against the internal opening of the crural canal, while the suture tightly closed the external aperture. The pubic and iliac portions of the fascia lata forming the margins of the saphenous opening were next sutured in a manner similar to that by which Macewen causes the external pillar to overlap the conjoined tendon in the inguinal operation. The result was apparent cure.

ENCYSTED VESICAL CALCULI.

M. BERGER (*Revue de Chirurgie*, November 10, 1888), at a recent meeting of the Société de Chirurgie, presented ten calculi, each of which had been imbedded in a vesical pouch, rendering operation very difficult. The rectal colpeurynter of Petersen had in this case greatly facilitated their extraction, which was effected by the supra-pubic method. Two days later the patient died of interstitial nephritis, and numerous other calculi were found which had escaped observation.

At the same meeting MM. Nicaise and Poutier reported deaths from rupture of the rectum during the use of Petersen's dilator, and M. Despres stated that five deaths from this cause had already been reported to the Society. The quantity of liquid injected in M. Nicaise's case was about ten ounces.

MR. FENWICK reported (*British Med. Journ.*, Nov. 17, 1888) an interesting case of encysted calculus in which the symptoms had lasted eight years. The calculus could be felt bimanually, and was subsequently discovered to be hour-glass in shape. The smaller piece (one ounce and a half) was found projecting into the bladder at the level of the left ureteral orifice, and the larger portion (four ounces and a half, the size and shape of a large hen's egg) lying in a diverticulum outside the back and base of the bladder. These two portions were connected by a very slender neck. The vesical piece was easily snapped off, leaving the neck protruding from the three-penny-piece-sized orifice of the diverticulum. The position of the opening rendered much dilatation of it dangerous.

It was impossible, therefore, to extract the encysted portion entire. Attempts to crush it, by means of lithotrite or forceps, failed. A chisel was guided through the orifice of the diverticulum and laid upon the stone; elastic counter-pressure was afforded by Petersen's rectal balloon. The calculus was then cut through by repeated blows with a mallet. After many shiftings of the pieces and sections in every direction, the stone was chiselled into sufficiently small fragments to allow of their being extracted through the orifice.

The wound rapidly healed, and the patient left for the country in six weeks without an untoward symptom.

THE ARTIFICIAL AUGMENTATION OF THE GROWTH OF HUMAN BONE.

MAX SCHÜLLER (*Deutsche med. Zeit.*, 1888, No. 99), in a communication to the Medical Society of Berlin, November 28, 1888, considers at some length the question of the artificial encouragement of bone-growth. The idea of the artificial increase of bone-growth is based obviously upon the general laws of

normal growth, but rests also upon a series of pathological observations and upon numerous experimental researches into the conditions under which the increase or decrease of bone-formation occurred.

Langenbeck, Bergmann, Dittel, Tillmans, Ollier, and others, have recorded the results of their observations upon the regeneration of bones, and Helferich, Haab, and von Bidder have confirmed them experimentally. In young persons, still in the period of growth, it was especially noticed that after necrosis and chronic inflammatory processes, an hypertrophy of the bones occurred, especially when these processes affected the diaphysis. In the neighborhood of the epiphysis and of the inter-articular cartilage, the results are different. If the latter is destroyed, a decrease in bone-formation follows. It has been accepted as true that an irritation is transmitted from the inflamed bone to the epiphysis, and this gives rise to more active bone-production. Schüller, however, believes that the greater vascularity of the surrounding parts finds expression, through the articular cartilage, in the production of bone.

The pathological increase in bone-growth has more rarely been observed in fractures, in inflammation of joints, etc., but likewise only in children. Experiments show that after irritation of bone in young animals, either directly through the scratching of the periosteum, or by the introduction of pegs in the middle of the diaphysis, an elongation of the bone almost constantly followed, while destruction of the inter-articular cartilage was almost as constantly followed by atrophy. Ollier has applied these observations practically in a case of atrophy of the radius following osteitis, in which there were increased growth of the ulna and deviation of the hand to the radial side. By destruction of the lower cartilage of the ulna he was able by reason of the altered growth conditions to bring the hand back into its normal position.

Von Langenbeck recommended after resection of the knee-joint the introduction of an ivory peg, in order to avert consecutive shortening. He made the same proposal for cases of imperfect development in infantile paralysis, but never practically applied it. In 1887 von Helferich recommended the establishment of an artificial congestion in the affected limb by means of an elastic bandage, giving rise to increased activity of nutrition of the bones and of the whole limb. He has especially employed this in cases of delayed union after fracture, in the hastening of the separation of the sequestrum in necrosis, and even in sound individuals with extremities of unequal length, and in all of these cases with favorable results. In cases of infantile paralysis, however, no good effects were obtained.

Schüller, in these latter cases, adopted and tried the elastic bandage, combining with it other processes of local treatment, certain dietetic regulations, and, in some cases, different operative procedures. He applied an Esmarch tube in such a manner that it compressed the veins, but left the arterial supply free. At first it was removed in a few hours; afterward he left it in place day and night, having careful watch kept as to the effect. In addition, he used massage, bathing, diet favoring the assimilation of lime salts, regular exercise, etc. All the children thus treated grew stronger and better. In one case, a four year old child, with paralysis of the right leg and shortening of the femur of more than one centimetre, was treated for three months, the

extremities then having become equal in length. In another, an otherwise healthy boy of nine years had crossed paresis and atrophy following infantile paralysis. The right arm and hand and the left leg were withered. Four months' treatment resulted in great improvement.

In another series of cases, in addition to the above-mentioned treatment, Schüller employed steel pins of different lengths inserted into the affected bones, with all antiseptic precautions, left for from five to nine days and then withdrawn.

He details three striking cases: one of infantile paralysis, with resulting paresis of both lower extremities, a paralytic pes calcaneus, and shortening of the tibia. One steel pin was inserted in the lower part of the tibia, and left for eight days. When the other treatment was begun, at the end of two months, the foot had gained four cm. in length and two cm. in breadth; the shortening of the extremity had disappeared; the ankle-joint, formerly flail-like, had recovered its strength; movement had returned to the toes; and the general cutaneous surface, formerly blue and cold, had regained its natural color and warmth. The second case was that of a patient fourteen years of age, who, when three years old, had undergone a resection of the ankle-joint leaving it loose and useless. Great improvement resulted. The third case proved that in a patient with genu-valgum it was possible so to localize the increased bone-growth as to correct the inequality in the lower end of the diaphysis which gives rise to the deformity. A steel pin was inserted two finger's-breadth above the knee-joint on the outer side. It was removed in five days. Two weeks later the other treatment was begun. In three months there was great improvement; in four and a half months the genu-valgum had disappeared; the femora had grown three cm. on the outer side, the form and line of the knee-joint had become normal.

In the discussion upon this paper, which occurred December 5, 1888, Herr Schüller emphasized the essential points of his treatment and his claims to originality, and has repeated them as follows in a letter to the Editor of THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES:

While much has been written upon the subject by the above-mentioned authors, none of them, not even von Langenbeck, employed in the human subject the method suggested. Ollier has only recorded two cases treated by scraping the periosteum, perforating the bones, etc. Helferich obtained some good results with a modification of the method of elastic compression suggested long before by other surgeons. Schüller, however, asserts that he was the first to aim at increasing bone-growth, not only by making the bone hyperæmic, but also by giving the shortened or withered limb a greater mass of blood, a more active circulation, and a larger support of nourishment having the quality of favoring bone-formation. By examination of the urine he has discovered what form of food, and which of the lime salts are best fitted to this end, having carefully estimated the quantities excreted and retained. The steel pegs need only be left for a short time, and may set up best a trifling degree of hyperæmia, but if this is followed by his combined treatment a continuous production of bone is almost sure to occur.

ARTHRECTOMY; ERASION OF JOINTS.

MR. EDMUND OWEN, in the course of a paper on this subject (*The British Medical Journal*, November 17, 1888), expressed the following views as to this operation, which is rapidly advancing in favor:

The construction of the hip-joint renders it unsuited for treatment by arthrectomy in chronic disease, but as a supplementary measure to resection of the head of the femur it is likely to prove of great value. The epiphyses may often escape mutilation, whilst the whole of the pulpy synovial membrane and all other diseased tissue are cleared out of the articulation. The cartilages joining the epiphysis with the shaft are neither disturbed nor trephined upon, and thus the risk of the patient's recovering with a greatly shortened limb is obviated. Indeed, it is even possible that the patient might recover, not only with a limb of normal length, but with a joint in which the movements are but little, if at all, interfered with. Such a result, however, is neither to be expected or aimed at.

After the operation, the limb is to be kept absolutely stiff, and fixed in splints for many months, and if, at the end of that time, a certain range of movement is discovered, the joint might be left to shake itself free, no manipulations being resorted to. In all probability, the knee will be synostosed and straight.

To cases of pulpy or chronic suppurative disease of the knee-joint the operation is admirably adapted, provided that the disease is not too far advanced, so that the bones are extensively implicated, and that the patient is the subject neither of general tuberculosis nor of albuminoid degeneration. In short, arthrectomy is the proper operation in most of those cases in which resection has hitherto been performed. Over resection it holds this great advantage, that it takes away from the articular surfaces only such tissues as are actually diseased.

On several occasions it has been noticed that after the joint had been thus thoroughly cleared of elements which were of a diseased or suspicious nature, the health of the patient had shown an immediate and marked improvement, appetite and general health altering for the better, and permanent convalescence being at once established.

Speculations were made upon the possible influence of the bacilli tuberculosis. The improvement which followed upon the clearing out of all the diseased tissues was as notable as that which often follows the amputation of a sarcomatous limb or a scirrhus mamma.

MR. G. B. WRIGHT (*The Lancet*, December 1, 1888) describes the operation and considers the most noticeable points to be: 1. Full exposure of every cranny in the joint. 2. Absolutely complete removal of all disease, scraping at any doubtful bony spots. Well-localized foci of disease in bone, if of limited extent, are no bar to success. The use of the cautery afterward is often good. 3. The crucial ligaments should be preserved, if possible, as they tend to steady the joint afterward. 4. The limb should be well fixed until healing is complete; then the patient may get about with crutches and a patten in a Thomas's knee-splint, or with the limb fixed in plaster of Paris. 5. As in excision, flexion will occur unless the limb is kept fixed for from two to three years at least. 6. In some cases actual lengthening of the limb occurs after

the operation, just as overgrowth not uncommonly follows necrosis from acute periostitis.

THE LIMITATION OF FLEXION IN POSTERIOR LUXATIONS OF THE ELBOW.

DR. E. ZUCKERKANDL (*Deutsche Zeitschrift für Chirurgie*, Band xxviii., 1888) has made a series of experiments to determine the causes of the limitation of movements of flexion in cases of dislocation of both bones of the forearm backward. He finds that it is not due to the displacements of the bones, or to their directly impinging one upon the other, nor does it depend to any great extent upon the stretching of the muscles, but chiefly upon the ligaments, especially the internal and external lateral ligaments. His observations led him to believe that the most posterior fibres of the external lateral ligament are the strongest portions of the capsule of the joint, and exercise the greatest influence in limiting flexion. The smaller the portions of the ligament left untorn at the time of the accident, the greater the possibility of movement in the direction of flexion. If the lateral ligaments are entirely torn through, the movements of the luxated elbow-joint are free.

The most rational method of reduction in such cases seems to be by means of hyper-extension, lessening the effect of the lateral ligaments, and in some instances entirely eliminating it. By overstretching the joint the fibres of these ligaments are torn successively from before backward until finally only the thin posterior border of the capsule remains. Reposition by flexion or traction of the forearm can then easily be accomplished.

In the commonly employed method in which extension in the axis of the upper arm is made upon the forearm while it is flexed at a right angle, the resistance of the ligament is overcome by direct traction. This method would also become more easily effectual if, as a preliminary procedure, the ligamentous fibres at fault were first fully destroyed by a vigorous overstretching.

THE DISTRIBUTION OF PARALYSIS AND ANÆSTHESIA IN INJURIES OF THE CERVICAL SPINE.

MR. WILLIAM THORBURN (*British Medical Journal*, December 22, 1888), who has had exceptional experience in observing the results of injuries of the spine, records his observations upon the distribution of paralysis and anæsthesia in nineteen cases of traumatism of the cord between the fourth cervical and first dorsal vertebrae. He traces the exact extent of the paralysis in crushes and also of the consecutive ascending myelitis by observing the way in which the muscles of the upper limb subsequently become paralyzed. He gives a table of the muscular nuclei of the brachial enlargement, extending from the supra-spinatus to the interossei—*i. e.*, from the fourth cervical to the first dorsal nerve. In some of his cases the positions of the affected limbs were made so characteristic by the partial paralysis with which they were affected, that the diagnosis of the exact seat of the spinal lesion was made at a glance. As to anæsthesia, his cases bear out the conclusions arrived at recently by Dr. Ross (*Brain*, January, 1888)—*i. e.*, that the outer parts of the limb are supplied by the higher roots, the inner by the lower in continuous order.

From observation of a large number of cases of injury in the region of the brachial enlargement of the cord, he concludes that in all cases, however complex the symptoms may appear, we are able, by means of a careful consideration of the distribution of the paralysis and anæsthesia, to obtain a definite diagnosis. In this way many of the cases usually described as "concussion" of the cord may be much more accurately diagnosed. Of a total of about 350 railway accidents of all kinds, and 50 spinal injuries due to various causes, which have come under his observation, he has never yet seen an instance in which *spinal* symptoms were present where he could not definitely postulate some gross injury—fracture, hæmatomyelia, meningeal hemorrhage, myelitis, meningitis, or sprain, with pressure upon certain nerve roots, without requiring to fall back upon the unknown "molecular" changes supposed to constitute concussion; and, hence, he is strongly led to believe that such observation will enable us to detect many cases of imposture, in which symptoms are irreconcilable with any definitely localizable lesion.

OPHTHALMOLOGY.

UNDER THE CHARGE OF

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ON THE INJURIES TO THE EYES WHICH OCCURRED TO THE GERMAN ARMY IN THE WAR AGAINST FRANCE IN 1870-71.

A report, edited by the Medical Department of the Prussian War Office, with the assistance of the Medical Departments of the Bavarian, Saxon, and Wurtemberg Ministries, has just been issued. It is very complete and carefully compiled and deserves to occupy a place in the library of every ophthalmic student. In most respects it is a great improvement on similar reports in connection with other wars, and this greatly because of the more advanced state of ophthalmology at this time, and since the time of the Franco-German War.

Some points in the general statistics, which constitute the first section of the report, deserve attention. In all, 860 cases of injury to the eyes or to vision were recorded, a percentage of 0.86 of the whole number of wounded, and of 8.5 of the wounds of the head. Of these 860, 786 were cases of wounds of the eyes, and 64 such in which vision was in some way injured, or altogether destroyed, as the result of wounds to the brain and skull. This frequency of wounds to the eye is compared with that given in the statistics of other campaigns: thus in the French army, during the same war, the percentage was 0.81, and in the American war 1190 cases, or 0.5 of all the wounded, occurred. The left eye was more frequently wounded than the right in the proportion of 374 to 317, partly, it is supposed, owing to the position taken up by the infantry whilst firing, and partly to the protection which the gun affords to the right eye from individual bullet wounds. After de-

ducting the cases of indirect injury, it was found that 96.2 per cent. of the wounds were caused by projectiles, and only 3.8 per cent. by bayonet or sword thrusts. Of the wounds from projectiles, again, 61.4 per cent. were bullet wounds, 38.6 per cent. wounds from portions of shells, etc. The percentage of the direct wounds—that is, such as were caused by projectiles striking the eye from the front, was found to be 0.28. Taking a radius of 12 mm. for each eye, we get a surface of 1808 sq. mm. for the extent over which direct wounds of either eye can take place; and taking the average surface of the whole body as equal to 1,185,000 sq. mm. the surface relation of the eyes to the whole body is as 0.15 : 100. But the eyes participate in the liability to injury of the whole head, which is twice as great as that of other parts of the body, so that the direct injuries were found to correspond closely in number to the calculated chances of injury. They formed also 2.6 per cent. of all the injuries of the head, a proportion which is the same as that of the exposed surface of the eyes to that of the head. The total number of cases of injury to the eyes was, however, so much greater that the compilers of the report have been led to assume that there must be a specific tendency to such wounds. This is explained partly on account of the small relative power of resistance possessed by the tissues of the eye, so that the blows, which in other parts of the body would do no particular harm, may produce serious damage to the eyes, partly on account of the great extent of the nervous connections of the eyes.

The second section of the report treats of the character of the wounds according to their cause. The different causes were: wounds with powder and from atmospheric compression, direct bullet and shell wounds, wounds produced indirectly by projectiles, bayonet and sword wounds, blows and other accidents.

Wounds from powder were mainly burns when the accident occurred, owing to an explosion near at hand, but there were also cases met with in which grains of coarse powder were found to have penetrated the eye. Injuries directly ascribable to mere atmospheric compression were very rare; one case is recorded in which, without any external wound, hemorrhage into the vitreous followed by detachment of the retina, resulted from the discharge of a musket close to the patient's temples by a man immediately behind. Similar cases have been recorded by MacCormack, Longmore, and others. Of the projectiles causing wounds of the eye, the immense majority were either conical lead bullets or portions of iron or lead shells. These, for the most part, produce complete destruction of the eye if they are received straight in the face, and either directly or by smashing the bone of the orbital wall.

Grazing shots only wounded the lids, and at the same time produced some slight denudation of the corneal epithelium. Some few cases were met with in which the bullet was lodged in the orbit without having injured the eye itself, and others, thirteen in all, where after complete destruction of the eye, the bullet was found to be lodged in the orbit.

Great variety was met with in the wounds to the eye caused by the bullet first striking the wall of the orbit. The eye was then mostly wounded indirectly, either by portions of broken bone, or as the result of hemorrhage or inflammation in its immediate vicinity. Of 72 cases of oblique hits, 34 broke through the temporal, 15 the nasal, 15 the upper, and 5 the lower wall of the

orbit. In 2 others the bullet had entered at the neck, passed along under the base of the skull and entered the orbit from behind, causing destruction of the eye as it passed through it. In some cases the conformation of the bridge of the nose had evidently led to the bullets being deflected into the orbit.

Guthrie and Thomson both drew attention to the comparative frequency of the simultaneous wounding of both eyes by bullets. This was also observed in the Franco-German War. A bullet was found to have passed sometimes horizontally, sometimes obliquely through both orbits in 26 cases. Destruction of vision also took place in some cases from extension of the lines of fracture of the skull to the optic foramen, and from the wounding within the cranium of the nerve fibres and visual centres. The most noticeable feature connected with wounds from explosive shells was the frequency of such as resulted from small pieces of metal penetrating the eye. These accidents almost invariably occurred from explosions which took place very close to the individual wounded, consequently several pieces of metal as well as portions of earth, stone, powder, etc., were often found lodged in the eye or orbit. Indirect wounds from projectiles of all sorts were only met with in 19 cases—the most common were those in which a portion of the soldier's gun or helmet was splintered by being struck with the bullet and the eye injured by the splinters. Several cases were recorded of injury to the eye evidently through the smashing of spectacles, and in one the eye was wounded by a piece of horseflesh which had been carried off by a portion of burst bombshell. The comparatively few wounds of bayonet and sword thrusts, for the most part, only involved the lids.

The third section of the report contains a very complete discussion of the types of accidents met with. These are treated under three headings:

1. Contusions and concussions of the eye;
2. Wounds in a stricter sense; and
3. Affections of the eye not immediately the result of the particular accident, but due to subsequent changes in the immediate neighborhood or in other parts of the body.

This section, while it contains nothing perhaps absolutely new, has been compiled in the most thoroughly critical manner, and the different injuries are discussed with very full reference to the literature of the subject. It will certainly well repay a careful study, and is distinctly the best part of the report, but contains too much to condense into an abstract.

The next section has reference to the cases in which sympathetic changes occurred in the other eye. This important chapter seems only to have been included in one other similar report, viz., that on the American war. Though carefully compiled, it is far from being as satisfactory as the other sections, and that because there is no discrimination made between the serious, and more or less malignant form of undoubted sympathetic inflammation, what is now with good reason considered to be an inoculation of the second eye with microorganisms, and the doubtful, and at all events comparatively trivial other forms of sympathy. The number of the cases is swelled, too, by including all in which there was merely sympathetic irritation. In ninety-seven cases in all, it is considered that a sympathetic origin existed for the subsequent conditions met with in the other eye. It was remarked, too, that all the affections of the second eye were met with in cases similar to such as

have been found by experience to predispose to sympathy. Only at most seventeen per cent. of the cases were actual inflammations of the second eye. Sympathetic changes most frequently made their appearance between six months and a year after a wound in the first eye had been received.

THE PATHOGENESIS OF SYMPATHETIC OPHTHALMIA.

DR. RANDOLPH, of Baltimore (*Archives of Ophthalmology*, vol. xvii. 2), has made a number of careful experiments on the same lines as those which led Deutschmann some time ago to pronounce so strongly in favor of the view, entertained by Shellen and others, that sympathetic inflammation as it is met with clinically is the result of inoculation of the second eye with micro-organisms which find their way directly from one eye to the other along the optic nerves. Dr. Randolph, although his experiments seem to have been conducted with great care, and have been sufficiently numerous to enable him to form a trustworthy opinion, has been unable to confirm any of Deutschmann's assertions. Both in dogs and in rabbits, the latter alone having been made use of by Deutschmann, nothing which could in any way be looked upon as of the nature of sympathetic inflammation followed the inoculation of the first eye with some drops of a suspension of the staphylococcus aureus in sterilized water. Dr. Randolph also failed to find micrococci in human eyes enucleated after perforating injuries.

These results, therefore, reopen the question as to whether or not it is possible to produce anything experimentally, which corresponds to sympathetic ophthalmitis in man. The experimental evidence then of the microbiotic origin of sympathetic ophthalmitis has still to be confirmed. All the clinical facts connected with that curious affection are, however, very much in favor of the migration hypothesis, which may, indeed, be said to afford a very excellent and welcome guide so far, with respect to treatment. Dr. Randolph seems to be fully alive to this, and deserves credit for not having lost sight of the clinical indications, notwithstanding the entirely negative result arrived at from his careful and interesting experimental researches.

SNOW-BLINDNESS.

DR. BERLIN, of Stockholm, a member of Nordenskiöld's expedition to Greenland in 1883, gives (*Nordiskt Medicinskt Arkiv*, vol. xx. No. 3) a very complete account of snow-blindness. The symptoms, geographical distribution, and cause of that affliction, have engaged his attention. He begins with a very complete *résumé* of the references to snow-blindness in literature, and finds the first mention of it in Xenophon's *Anabasis* (book iv. chap. v.).

Snow-blindness occurs principally in Arctic regions, as in Greenland, Canada, the Siberian coast, Spitzbergen, and the surrounding ocean. It has been met with, too, as far north as man has reached. On the American continent it extends further south than elsewhere, except in high mountainous regions. It does not occur in Iceland, or in Norway and Sweden, with the exception, again, of isolated cases met with in the mountains. To judge from the protective measures taken by natives in Arctic regions, Esquimaux, and Siberians, it must be a common enough occurrence there. Whenever it occurs in Arctic or Alpine regions it only attacks those who are out in the

open air. It begins to show itself soon after the sun first makes its appearance at the conclusion of the Arctic night. By far the greatest number of cases within the Arctic circle take place in the months of April and May. Berlin believes that in Alpine districts again it might occur at any time, while its greater frequency in spring and summer is to be ascribed to the fact that most Alpine climbing is done at those times. A great many Arctic travellers have noticed that the weather which seems most to favor the occurrence of snow-blindness is what is differently described by them as a peculiar kind of "thick," "heavy," "misty," "foggy," or "hazy" weather. Nothing seems, however, to be known as to the real nature of this weather. The temperature has generally been found to be below the freezing-point.

The affection begins very much like cases of catarrhal conjunctivitis with a feeling as if sand or some foreign body were in the eye, and a desire to blink and shade the eyes. An examination at this period reveals nothing further than a slight hyperæmia of the conjunctiva, increased lachrymation, and slight contraction of the pupils. This is succeeded by an aggravation of the symptoms leading to constant burning pain which radiates over the temples, etc. This gradually leads, too, to blepharospasms, and the patient has then to be led about. The objective appearance at this time are: increased hyperæmia and chemosis of the conjunctiva, the chemosis being limited, however, to a narrow band surrounding the cornea and corresponding to the portion exposed when the eyes are open. Berlin has always found the cornea intact, but others (Envall and Gardner) have described cloudiness and even ulceration of the cornea. The ophthalmoscopic examination reveals nothing distinctly abnormal, and there is no real night or day blindness. Snow-blindness may come on very quickly, in a quarter of an hour even, as observed by Copinger; the rapidity of onset depends on the degree of completeness of the precautions taken against it. In cases in which the eye has been properly shaded, the affection is longer in developing, and is less likely to be so severe. It lasts two or three days only, if the patient be treated indoors, but removal to the dark does not of itself in any way appear to soothe the suffering. All, even natives, are equally subject to it when the conditions are favorable to it. In a few cases only one eye has been affected. An interesting example of this is given: the case of a sergeant who was attacked in the right eye during an expedition from West to East, and some time afterward, and after complete recovery, was again attacked in the left eye whilst the expedition was moving from East to West. Eight other cases met with by the explorers are referred to which show that it is always the eye to the side of the sun which is affected when one alone suffers.

As to the nature of snow-blindness it has usually been supposed that it is a retinal affection caused by irritation from the excessive flare of the light reflected from the snow. This irritation is supposed to give rise to pain and photophobia, and to lead reflexly to irritation of the conjunctiva. Berlin observes, however, that there is absolutely no similarity between the conditions known to be produced by strong light and snow-blindness; there is no pain or photophobia, and no change in the anterior part of the eye, but diminished visual acuity and scotomata. He further points out that the freer the atmosphere is from water vapor the more powerfully is the solar radiation felt. This fact, first discussed by Saussure on ascending Mont

Blanc in 1774, has been abundantly confirmed since by physicists. When in very cold regions, then the sun's rays are felt most burning. The members of Nordenskiöld's Greenland expedition suffered considerably from sun-burning. The exposed skin was frequently the seat of an exudative dermatitis. A similar condition is well known amongst Alpine climbers as "Schnee-rose." Why should the eyes escape, then, an irritation which is so active in other exposed parts? is the reasoning to which Berlin leads up. He considers snow-blindness to be simply, as in his experience it has all the appearance of being, an erythematous conjunctivitis. Tables are given which show that it is most frequent at those times of the year when the solar radiation penetrates most strongly to the surface of the earth. It is mostly met with, too, in very dry regions, and is absent in Norway and Iceland, as he believes, on account of the influence of the Gulf Stream on the moisture of the atmosphere. It was shown by Jensen, in experiments on different animals, that less than 10 per cent. of the heat rays impinging on the eye penetrate to the retina, while 50 per cent., at least, are absorbed by the cornea. The cornea, therefore, receives the greatest burning, and this may well account for the photophobia, as well as for the occasional ulceration referred to. The snow and ice hazes, which have also been found to cause snow-blindness, and the nature of which has never properly been explained, he considers to be cirri which have descended to the ground, and which produce their effect on the eye by simple mechanical irritation.

OTOLOGY.

UNDER THE CHARGE OF

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FOREIGN BODIES IN THE EAR.

DR. A. MARIAN, of Aussig, Bohemia, adds one more timely warning on this important subject (*Prager med. Wochenschrift*, Oct. 17, 1888). In answer to the question "What shall the general practitioner do when confronted with a foreign body in the ear?" he says: The first thing to be done is to convince himself that a foreign body is really in the ear; also whether it is really in the ear the patient says contains it. It has happened that the patient, in his excitement, has presented the wrong ear for treatment. If, now, the foreign body being present in the ear, any instrument is inserted, without the proper illumination of the ear, not only will the patient suffer pain, but he runs a great risk of receiving an injury to his membrana tympani. After having diagnosticated the presence of a foreign body with the aid of a mirror, the next step is to determine its position, whether it lies in the meatus, the isthmus, or against the membrana in the fundus of the auditory canal. Then the employment of a moderately strong syringing with warm water will usually dislodge and bring out the foreign substance, if it is not wedged tight.

"In all cases, however, in which the general practitioner is unable to determine accurately the precise situation of the foreign body, or in which the foreign substance is imbedded or wedged in the canal, or when the latter has been irritated, wounded, and swollen, through previous unskilful attempts at extraction, the advice is given not ever to attempt syringing the ear, but to call in the service of an aurist. Because it now becomes necessary to adopt a treatment which no general practitioner of medicine is able to carry out."

SOFT CHANCRE OF THE MIDDLE EAR.

DR. GURANOWSKI (*Deutsche med. Zeitung*; *Annales des Maladies de l'Oreille*, Nov. 1888) reports what he considers may be a unique case in science. The above-named peculiar lesion occurred in a young servant girl affected with soft phagedenic chancres of the genital organs; auto-inoculation occurred in the nose from taking snuff with soiled fingers. During treatment of this rhinitis, an acute otitis media developed on the left side, with perforation of the membrana tympani. The etiology of this was rendered clearer by the occurrence, soon after, of small chancres on the tragus and external auditory meatus.

Cure was effected by the application of iodoform and lavage of the Eustachian tube by boracic acid water.

BACTERIOLOGICAL RESEARCHES IN CASES OF ACUTE OTITIS MEDIA.

DR. NETTER of Paris, has made a prolonged study of bacteriology in a number of cases of otitis media acuta, and has published an exhaustive brochure on his work (*Annales des Maladies de l'Oreille*, etc., Oct. 1888).

He starts with the recognition of what he considers a fact, that "otitis media acuta" is not unique and always due to the same microorganism. There are many forms of otitis, each having a special microbe. Each of these forms of disease presents special characteristics dependent upon the properties of the microbes which have given them origin. Hence the undertaking of Netter has not simply a theoretical interest; it has a practical bearing, as it furnishes some important prognostic points.

He claims that four distinct forms of otitis media acuta exist, viz.:

1. Otitis due to the pyogenic streptococcus of Netter, Zaufal, Moos, Holst, and Dunin.

3. Otitis caused by the pneumococcus of Fränkel, also recognized by Netter, Zaufal, and others.

3. An otitis caused by the pneumo-bacillus of Friedländer and Zaufal.

4. An otitis associated with the presence of the pyogenic staphylococcus. (Fränkel, Simmonds, Dunin, Rohrer, and Netter.)

Otitis dependent upon the presence of the streptococcus is the most frequent. It is also claimed that the microbe productive of lobar pneumonia may produce an acute otitis media, and examples of such cases are given.

The microbes of Friedländer have also been demonstrated to be present in the exudation of an acute otitis (Zaufal).

Netter has observed four cases in which the staphylococcus aureus was associated with streptococcus or the pneumococcus, in an acute otitis media.

All the pathogenic microbes which are found in otitis media can be found in the nasal fossæ, the mouth, and the pharynx of healthy subjects.

The frequent occurrence of otitis on both sides is due, in the great majority of cases, to the pathogenic agents which come from the bucco-pharyngeal cavity, and which find their way into the tympanic cavity through the Eustachian tube. The mode of invasion explains the production of otitis in general maladies like typhoid fever, measles, diphtheria, scarlatina, etc.

Sometimes microbes may reach the middle ear by the bloodvessels or the lymphatics, but this is a very rare occurrence. The usual mode of invasion of the middle ear shows the importance of watching the mouth and the pharynx.

It is necessary to endeavor to obtain an antiseptics as perfect as possible in these cavities, especially in measles and typhoid fever. Hence the antiseptic measures of the present day in ear diseases are amply justified by what we know of the various microorganisms which produce otitis media and its complications.

BACTERIAL DIAGNOSIS AND PROGNOSIS IN SUPPURATIONS OF THE MIDDLE EAR.

PROF. MOOS, of Heidelberg, has made an interesting communication of this subject in the *Deutsche med. Wochenschrift*, Nov. 1, 1888. He claims for Zaufal the merit of having shown that genuine otitis media acuta occurring in otherwise healthy individuals, in consequence of a cold in the head and respiratory tract, is largely influenced by the pneumo-bacillus of Friedländer, and the diplococcus of Fränkel-Weichselbaum. It appears that Zaufal has further shown that the presence of the streptococcus pyogenes in the secretion from an inflamed middle ear is of the greatest importance in a prognostic sense, as it has been so often found in the most serious and life-threatening cases of middle ear inflammation.

Moos then gives the history of three cases of ear disease, illustrative of the above:

In the first case an acute exacerbation occurred in a diabetic patient suffering from chronic purulent otitis media. The mastoid cells then became involved. The pus removed from the mastoid abscess contained the diplococcus of Fränkel-Weichselbaum.

In the second case an acute otitis media occurred, which was followed in the seventh week by inflammation of the mastoid cells. Numerous streptococci and diplococci were found in the pus liberated from the mastoid.

In the third case there was a chronic purulent otitis media with polypi and cholesteatomatous masses in the drum cavity. Caries, too, was found, and phlebitis and thrombus of the lateral sinus ensued. Finally, a septic thrombus formed in the bulb of the jugular vein; meningitis purulenta at the base of the brain and an abscess in the cerebellum were found after death. Large quantities of streptococci were found in the cholesteatomatous masses.

PATHOGENESIS OF BACTERIA IN PURULENT PROCESSES IN THE EAR.

DR. ROHRER, of Zurich, explains the pathogenesis of bacteria in the ear as follows (*Deutsche med. Wochenschrift*, Nov. 1, 1888): The localization of bac-

teria from the mouth and naso-pharynx occurs by direct continuity and contiguity through the Eustachian tube, or by means of the bloodvessels and lymphatics. The morphology of the bacteria varies in fetid and non-fetid secretions and also in that of acute and chronic cases. In fetid secretions cocci and bacilli were constant elements; in non-fetid secretions cocci only were found. In the secretion of acute cases bacilli were found only after the secretions became fetid.

In dermatoses of the external meatus and concha there were 82 per cent. of cocci to 18 per cent. of bacilli. In fetid dermatoses there are 67 per cent. of cocci to 33 per cent. of bacilli. In non-fetid dermatoses only cocci of various forms were found.

THE SPHENOID BONE. SOME OF ITS POSSIBLE ACOUSTIC FUNCTIONS.

MR. J. A. MALONEY, otacoustician, of Washington, D. C., has made a series of tests of the conductivity of sound possessed by some of the cranial bones, notably the frontal, the occipital, the parietal, the ethmoid, and the sphenoid (*New York Med. Journal*, Aug. 11, 1888). All of them manifested a very weak conductivity of sound excepting the sphenoid. Not only was a little ball suspended against a wing of the sphenoid thrown off by a slight tap with a mallet on the opposite wing, but when the sphenoid was made to communicate its vibrations to the diaphragm of a microphone in electric circuit with a telephone receiver, merely drawing lightly a fine silk thread over the free wing of the sphenoid was heard distinctly in the receiving telephone. Also breathing gently through a tube against one wing could be heard in the receiver. The temporal bone was submitted to the same tests, but gave similar results only at one point, viz., the jugular fossa. No other cranial bone gave these results in conductivity of sound.

From these experiments, Mr. Maloney traces to the sphenoid and the temporal bones the phenomena of—

1. *Localization of sound.* "The direct or maximum result in localization is probably due to aerial conduction through the meatus auditorius externus. The indirect or bone conduction being through the sphenoid (from one wing to the other and thence to the internal ear upon the opposite side), this, probably, gives a maximum and minimum sensation by which the mental act of localization of sound is accomplished."

2. *Tinnitus aurium.* Since the sphenoid seems extremely susceptible to transmit minute sound vibrations, Maloney suggests that the pumping sounds so frequently mentioned as this kind of subjective noise in the head, may be due to an aneurism or some abnormal condition increasing in intensity the flow of blood through the internal carotid, ophthalmic, or great meningeal arteries in their passage through this bone, or to the same factors through the jugular, in its relation to the temporal bone.

3. *Autophonia.* This phenomenon is explained as follows: "When the Eustachian tubes are closed entirely (by which equal pressure upon each side of the membrana is prevented), may not the strong vibrations of air set up in the larynx and pharynx (the mouth cavity being known as a powerful resonator) be sent to the seat of audition through the agency of the sphenoid bone, particularly at the part situated between the ethmoid and occipital bones?"

4. *Color audition.* "May not color audition, in view of the readiness with

which the sphenoid bone takes up and delivers vibrations, be due to mechanical stimulation of the optic nerve by impingement of the same upon the sphenoid bone in its passage through the optic foramen?"

DISEASES OF THE ACOUSTIC NERVE.

DR. GIUSEPPE GRADENIGO, of Padua, has recently made a series of clinical studies on the above-named subject, and draws the following conclusions (*Archiv für Ohrenheilkunde*, Bd. 27, Nov. 1888): The acoustic nerve participates, in general, more rarely with endocranial diseases than the optic nerve. Further, it is claimed that the acoustic nerve in the various forms of endocranial diseases which accompany neuritis of the optic nerves, manifests slight disturbances in nutrition, which cannot be demonstrated in the functional tests, and clinically show only an abnormal excitability. Finally, it is claimed that in rare cases in which an endocranial disease is attended by a pronounced functional disturbance in the auditory nerves, a peculiar form of deafness may occur, which is distinguished from the deafness produced by diseases of the internal ear, by the fact that the perception of high notes and watch is maintained, but that for intermediate notes is defective.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF

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DIPHTHERIA; TOPICAL TREATMENT WITH INSUFFLATIONS OF FINELY PULVERIZED SUGAR.

C. LORAY, of Frankfurt am Main (*Deutsche med. Woch.*, Nov. 15, 1888), as the result of more than eighty observations in children from one year upward and in adults, in all gradations of the disease, finds that the duration and extent of the deposit are much diminished, the fetid odor quickly overcome, the membrane readily detached under copious mucous secretion, and the cough facilitated in many cases of involvement of the larynx. In several cases of extensive ulceration, fatal by sepsis or by pneumonia, Prof. Weigert and his assistants found separation of the membrane in a much more advanced stage than in similar cases which had been treated by other methods. Loray neglects to state the frequency with which he makes the insufflations.

Vinegar is highly recommended by DR. FRIEDRICH ENGELMANN, of Kreutznach (*idem.*), as the very best agent of a very extensive detailed series with which he has made experimental observations.

TOPICAL TREATMENT OF TUBERCULOSIS OF LARYNX.

The topical use of menthol is highly endorsed by ROSENBERG, who has used it uninterruptedly since 1885 (*Therap. Monats.*, Aug. 1888), commencing with a 10 per cent. solution in oil and increasing to 20 per cent. He claims for menthol an advantage over lactic acid in its analgesic effects, which increase with its use. The pain following its use passes off much more quickly, and it is not at all caustic. A table of 59 cases thus treated is well worth critical perusal.

DR. KLIMMER (*Deut. med. Wöch.*, Dec. 7, 1888, et seq.) reports a number of successes under treatment by curetting and frictions with lactic acid. In one instance four miliary tubercles were seen on the epiglottis, as verified by microscopic examination of the fragments scraped. The principal internal treatment was with creasote. A very important point insisted upon by this writer is avoidance of loud speaking.

AN INSTANCE OF SUCCESSFUL ENDOLARYNGEAL TREATMENT OF CARCINOMA OF THE LARYNX.

SCHNITZLER reports (*Deutsch. klin. Wöch.*, Oct. 25, 1888) a case treated by him more than twenty years ago, and still living. The patient, a female, had been operated upon twice by Turck unsuccessfully before she came under Schnitzler's treatment in July, 1867. The malady began in 1865 with hoarseness and cough, and the patient had to abandon her occupation as an actress. She was anæmic, emaciated, and dyspnoic, so that she presented the appearance of a consumptive. Exploration of the chest revealed nothing abnormal in the lungs. The vocal bands were reddened and thickened, with small and large gray and red proliferations of horny aspect, which occupied principally almost the entire free border of the right vocal band, and which so occluded the calibre of the glottis that the vocal bands could move only slight distances. Turck's diagnosis of epithelioma had been verified by Wedl from microscopic examination of extirpated particles; and the same diagnosis of Schnitzler, by two of Rokitan'sky's assistants, Biesadecki and Scheuthauer.

Several applications of the electric cautery were made in Oppolzer's clinic until the neoplasms had been thoroughly destroyed and the vocal bands transformed into veritable cicatricial strands. On September 13th, the parts looked fairly well; but hoarseness continued, with that peculiar falsetto which is almost characteristic of unilateral paralysis. There was still some diminished mobility in the right vocal band, but it was of mechanical origin; the arytenoid cartilage being enlarged and the vocal band much smaller and thinner than its fellow, and, furthermore, so overlaid by the ventricular band as almost to hide it; conditions produced by the morbid process which had long subsided. The cure had been complete.

This observation indicates the propriety of attempts to remove malignant growths endolaryngeally when favorably located, inasmuch as no harm can result if the attempts are timely made and properly executed. Success can be expected only when the malady is localized, when the growth has not undergone degeneration, and when there has been no infiltration into the adjoining lymphatic glands. At the same time not only must the neoplasm be thoroughly eradicated, but the tissues from which it sprung must be effectively

destroyed. The best agent for the purpose is the electric cautery. While much hope cannot be given, yet in some instances life may be prolonged for months and years; and more than this cannot be accomplished by extra-laryngeal treatment, whether partial resection of the larynx or complete extirpation.

THE RESULTS OF MEDIAN SECTION OF THE LARYNX.

DR. ALBERT HOFFA (*Therap. Monats.*, Nov. 1888) studies this subject on the basis of 104 collations of operations performed since 1879, or the period in which antiseptic surgery has been practised. He shows most conclusively that it is not at all a dangerous operation; and that the results depend altogether upon the character of the lesion for which it is performed; while its effects upon the voice depend solely on the seat of the lesion and its special character.

LARYNGECTOMY.

DR. EDOARDO BOCCOMINI successfully extirpated September 25th the entire larynx of a man, aged fifty-four, for cancer. Median incision; detachment from soft parts with spatula; separation from trachea; detachment from pharynx, then from thyro-hyoid membrane. He commenced by introducing a large canula of celluloid, which completely occluded the cavity of the trachea; then gave chloroform. A Faucher tube was introduced into pharynx and œsophagus for alimentation. A dressing of iodoformed gauze was placed over all (*Gaz. med. ital. Lombardia*, Nov. 1888; *Union Méd.*, Nov. 22, 1888).

DR. E. KÜSTER exhibited to the Berliner med. Gesellschaft (*Berliner klin. Woch.*, Nov. 19, 1888) a man, fifty-five years of age, from whom, August 31, his assistant, Dr. Barth, had extirpated one-half of the larynx for carcinoma, leaving the cricoid cartilage intact. The voice was very good. He showed a larynx from another patient, a man fifty-seven years of age, from whom he had removed the other half on September 10th. Two days earlier he had removed some carcinomatous cervical glands. The superior laryngeal nerve was severed. Bronchitis ensued, but ceased after the excision of the diseased half of the larynx. Three weeks later persistent bronchitis ensued, and death from pneumonia took place seven weeks after the operation. It required some inspection of the preparation to recognize that one-half of the larynx had been removed.

Küster called attention to three points: 1st. He always sought to preserve the cricoid intact in unilateral extirpation. 2d. Glandular infiltration was more frequent than it was generally thought to be. He had performed one complete laryngectomy and four unilateral ones, four for carcinoma, and one for carcinomatous mixed tumor. Glandular infiltration had existed in three cases out of the five. 3d. Section of the superior laryngeal nerve seems to produce bronchitis even when the larynx or trachea is not opened, and sometimes leads to fatal pneumonia. The cessation of the bronchitis in his case, as soon as the excision of the larynx had been accomplished, seemed to indicate that the cases of bronchitis in question were attributable to the penetration of mucus and other matters on account of the abolition of sensibility in consequence of the section of the superior laryngeal nerve.

TAMPONING THE TRACHEA.

J. MICHAEL (*Berlin. Klin. Woch.*, Sept. 10, 1888) described in the *Deutsche med. Woch.*, 1882, a method of tamponing the trachea by placing compressed sponge around the canula and covering it with parchment foil. This cover he regards an essential portion of the procedure, as without it, the sponge acts as a filter and allows fluids to trickle into the bronchial tract. Hence the failure of the tamponade with uncovered sponge. Michael recommends the surgeon to compress his own sponge in preference to using the bought article in the shops, which he has found unreliable for this purpose. The compressed sponge is to be saturated *in situ* with water or glycerine injected from a hypodermatic syringe, the nozzle of which pierces the covering without detriment to the process.

He has thus tamponed a case of sphacelating laryngeal carcinoma for fifteen months, with three perforations between the trachea and œsophagus, with five weeks' intermission after the perforations had closed; and after the patient's death from marasmus the trachea was found intact and the lungs sound. He also recommends covering the canula with drain tubes when the wound is large enough. This method is absolutely safe. It likewise prevents ulceration from the end of the canula. In removing these tampons Michael recommends the adoption of the position with the head pendant so that any fluid above the tampon escape by the mouth and the fistula.

CURE OF EXOPHTHALMIC GOITRE BY RELIEF TO INTRANASAL DISEASE.

HOPMANN completes (*Berlin. Klin. Woch.*, Oct. 15, 1888) the record of a case reported by him in 1884 in the *Tageblatt der 58. Versammlung Deutscher Naturforscher und Ärzte zu Strassburg*, in which the treatment of a concomitant rhinopharyngitis sicca cured a case of Basedow's disease in a woman forty years of age. He refers to similar cases reported later by Hack and by Fränkel, cured by treatment of the opposite condition, stenosis of the nasal passages from hyperplastic turbinated bodies.

DERMATOLOGY.

UNDER THE CHARGE OF

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AND

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ON PASTES.

The object of pastes, as GRUENDLER states (*Monatshefte für praktische Dermatologie*, No. 20, 1888), is twofold: the absorption of the secretions and

excretions, and the deposition of a powdery residue which serves to fix the medicament on to the skin. To determine which powder or powders were best adapted for these purposes experiments were made testing the absorptive power of the individual powders with water and oil, and with, as to the most important substances, the following results :

	Weight of water.	Weight of oil.
Magnesium carbonate takes up	5½ times	7½ times.
Kieselgur (a silicious substance) takes up	3½ "	3¼ "
Kaolin takes up	1½ "	⅔ "
Zinc oxide takes up	1⅝ "	1⅔ "
Talc takes up	⅔ "	½ "
Creta takes up	⅔ "	⅔ "
Amylum takes up	1 "	⅓ "
Lycopodium takes up	½ "	0 "

Magnesium carbonate stands first on the list in absorptive power, but fails to fulfil the second condition, for when mixed with fatty substances, instead of a good drying paste of proper consistence there results a soft, sticky cement. As a simple dusting powder for the purpose of absorbing discharges, however, it is unexcelled. It will be seen that the several substances commonly employed in the preparation of pastes, such as kaolin, zinc oxide, and starch, meet, in a great measure at least, the conditions. Lycopodium, which as a dusting and absorptive powder is so generally used, is practically without value, as its absorption of water is, even under exceptionally favorable conditions, but slight, while oil is not absorbed at all.

PURPURA HEMORRHAGICA.

MILLIGAN reports (*Lancet*, October 13, 1888) a case of hemorrhagic purpura with fatal termination. The patient was a stout, middle-aged, able-bodied man, of good history and habits. After several days of rheumatic pains, purpuric spots made their appearance, first on the legs and then on the arms. The pains ceased as soon as the eruption had appeared. The first eight days the disease was apparently retrogressing, but on the ninth day he was suddenly seized with severe pains in the right side of the abdomen. Toward night these diminished somewhat, but early the following morning there was a marked exacerbation of pain, with dulness on percussion. The pain persisted, and the patient passed rapidly into fatal collapse. A post-mortem examination disclosed a healthy condition of all the organs. The lower half of the small intestine was extremely congested, and toward the ileo-cæcal valve was almost black; the cæcum and ascending colon were also of a very dark color. On opening the intestines the above parts were found to contain a large amount of more or less disorganized blood. The striking point about the case, as the author adds, was the comparatively mild type of the cutaneous symptoms, indicating in no way the grave character of the malady.

THE SPREAD OF LEPROSY.

From the literature and personal investigation PETERSON (*Monatshefte für praktische Dermatologie*, No. 20, 1888) has collected data showing a gradual

increase and dissemination of leprosy throughout Russia. In the past sixteen years in St. Petersburg alone the records show forty-three cases, which for evident reasons probably represent but a proportion. He is forced to the conclusion that the disease is due to the bacillus so often described, and that it is spread by contact, the bacillus requiring, however, for its development certain other, as yet unknown, conditions. In view of the possibility of its communication from man to man, the author believes isolation of those affected proper and justifiable.

SODIUM ETHYLATE IN THE TREATMENT OF LUPUS.

Attention is again directed (*British Medical Journal*, October 6, 1888) to the application of a solution of sodium ethylate as a valuable remedy in the treatment of lupus by L. A. TAYLOR. In the case cited the disease had begun in early childhood and still persisted at the age of fifty-eight, the affected area (the face) being quite extensively and destructively involved. Thorough curetting, under chloroform, was practised by the writer several times, but while the patient was somewhat benefited, the disease continued active and progressive. Ethylate of sodium was applied to the remaining islets with encouraging result. This was applied once daily for three consecutive days. Several days later the scabs or crusts, which had formed, loosened and fell off, leaving a perfectly healthy surface beneath. New foci, as they appeared, were similarly treated, and in this manner the disease was kept under control and its further progress prevented. The application is attended with but little pain, and this is transitory. During the time the solution is being applied water is not to be allowed to touch the parts.

TREATMENT OF CALLOSITIES.

In the *Münchener medicinische Wochenschrift*, No. 28, 1888, ROESEN describes his method for the successful treatment of warts, corns, and other callosities. The growth or patch is moistened with an antiseptic solution, and then thickly covered with salicylic acid. Moist borated lint, in several layers, is placed over this, and the whole covered with gutta-percha tissue and bandaged. This is allowed to remain undisturbed for five days, at the end of which time the dressing is removed, and the thickened epidermis is usually found shrunken and loosened from the underlying parts. In callosities of high grade it may be necessary to repeat the treatment. The writer states that he has never seen a caustic effect from the application.

THE ETIOLOGY OF ALOPECIA AREATA.

In the past several years H. LELOIR has had (*Bulletin de l'Académie de Médecine*, June 26, 1888) under observation 142 cases of alopecia areata. In 50 of these the most thorough examination, clinically and microscopically, failed to show the slightest evidence of any predisposing or exciting cause for the disease.

In 36 cases the patients were of a markedly nervous temperament, and various nervous symptoms had preceded the appearance of the bald patches.

In a few of the latter cases he examined, histologically, the peripheral and

cutaneous nerves taken from the patches; in one case all the signs of a degenerative atrophic neuritis were found; in another apparently similar case the cutaneous nerves showed no change.

In 21 cases there was sufficient basis for the belief in the contagiousness of the disease. His examinations for parasites were practically negative. In one instance; in the corium, were seen small, granule-like bodies, which could be mistaken for the micrococci described by Robinson as the cause of the disease, but they proved to be the so-called "mast-cells." Numerous inoculations of lower animals were also without result. The author believes, evidently, in the existence of at least two varieties of alopecia areata one contagious (parasitic) and the other tropho-neurotic, but confesses that as yet there are no known clinical or anatomo-pathological characters which would serve to differentiate.

STRUMA, SCROFULA, AND TUBERCULOSIS FROM A DERMATOLOGICAL STANDPOINT.

LELOIR considers at some length (*Bulletin Médical*, July 1 and 4, 1888) the conditions known as struma, scrofula, and tuberculosis. The first is usually transitory, and to be looked upon as a normal physiological state of early life; if it persists, it constitutes the so-called lymphatic temperament, which, in itself, is not pathological, but predisposing. It is characterized, anatomically, by dilatation of the lymphatic spaces of the cutaneous structure. In this state there is a strong disposition to catarrhal troubles, impetigo, and eczema, and a good soil is furnished for the lodgement and multiplication of parasites.

In regard to scrofula, if tuberculous disorders and the so-called strumous state are taken from it, very little, if anything, remains. As the author adds, the "king's evil" of the older writers is but a local tuberculosis. *Lupus vulgaris* is also, beyond all cavil, a tubercular lesion. In fact, all the various local lesions which have been considered as scrofulous are of a tuberculous nature, and in order that general infection—tuberculosis—may be prevented, active therapeutic measures are urgently demanded.

A CASE OF TUBERCLE-INOCULATION.

VON DÜRING gives the notes (*Monatshefte für praktische Dermatologie*, No. 22, 1888) of an apparently clear example of tubercular inoculation. The patient, a girl, aged fourteen years, of good antecedent and family history, at least so far as pertained to tubercular diseases, transferred the ear-rings from a companion, who had just died of phthisis, to her own person. Although her ears had been pierced she had not lately been wearing appendages. The ears, therefore, soon became somewhat tender and sore, but she continued to wear the ear-rings. A superficial ulcer gradually developed. The glands of the left side of the neck became hardened and swollen, and the overlying skin in places ulcerated, and these various ulcerative lesions, when the patient came under the writer's observation, a year and a half after her companion's death, presented every indication of a tubercular character. A cough was also present, and on percussion, beginning dulness of the left apex was discovered. The sputa and scrapings from the lesions on the ear and neck were examined, and the presence of the tubercle-bacillus disclosed. At the time of the report the patient was in the last stages of phthisis.

OBSTETRICS.

UNDER THE CHARGE OF

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THE TREATMENT OF PUERPERAL ANÆMIA.

OSLER (*Boston Medical and Surgical Journal*, November 8, 1888) reports a case of puerperal anæmia, profound in character, suffering from fever and diarrhœa, and without splenic tumor; nine months had elapsed since confinement. The blood was lacking in red corpuscles and hæmaglobin, and abounded in leucocytes.

Iron failed signally to benefit the patient; under the use of arsenic she recovered. Arsenic should be given in doses of from 5 to 25 minims of Fowler's solution, three times daily; in cases in which atrophy of the gastric tubules is not present, the drug is specific in its action.

DELAYED LABOR WITH TWINS.

FUCHS (*Ibid.*) reports the case of a multipara in whom the second twin was born fifty-two hours after the first; the first presentation of the second twin was shoulder, and cephalic version was performed. As uterine contractions did not come on, podalic version was made, and delivery effected; a few moderate uterine contractions accompanied extraction. The placenta of the first twin was adherent. Mother and children recovered.

AXIS TRACTION WITH TARNIER'S FORCEPS.

VARNIER (*Gazette Hebdomadaire*, No. 47, 1888) believes that in cases of pelvic contraction of moderate degree Tarnier's forceps may be applied to the head in the biparietal diameter when engaged transversely at the superior strait and delivery successfully performed, because the instrument leaves the head free to rotate as descent occurs. He illustrates this application of the forceps by cuts, and adds the report of 29 cases treated by Pinard. The antero-posterior diameter of the pelvis in these cases varied from normal to 2.85 inches; in 21 cases delivery was accomplished by forceps and the mothers recovered, 3 children died. In the remaining 8 cases basiotripsy was performed.

LEPAGE (*L'Union Médicale*, November 20, 1888) reports a successful delivery by Tarnier's forceps applied at the pelvic brim, and adds a detailed account of the method of application. His views are those of Pinard stated above.

THE COMPLICATIONS OF PREGNANCY AND PARTURITION CAUSED BY
PERITONEAL ADHESIONS AND FORMER SUPPURATION.

KRUKENBERG (*Archiv für Gynäkologie*, Band xxxiii. Heft 1) has collected reported cases of occlusion of the intestines from peritoneal adhesions caused

by septic inflammation after labor, which ended fatally at a subsequent labor with the usual symptoms of intestinal obstruction. Adhesion of the uterus to other organs may cause delayed labor through weakened uterine contractions and also post-partum hemorrhage.

Krukenberg reports a case of fatal puerperal peritonitis, in which the source of infection was the products of a former perityphlitis, the sac having been ruptured by the growth of the pregnant uterus. Abortion is not infrequently produced by adhesions preventing the growth of the impregnated uterus.

KYPHOTIC PELVIS; SPONTANEOUS DELIVERY AT TERM.

GUSTAV BRAUN (*Wiener klinische Wochenschrift*, No. 34, 1888) reports a typical case of kyphotic pelvis in which the pelvic inlet was oval, enlarged in its diameters; the outlet was contracted in all diameters, especially transversely. Anteversion of the uterus was present; the fœtus was in right occipito-posterior position and presentation.

The anteversion of the uterus was corrected by an abdominal band; labor occurred spontaneously, the head descending in the right oblique diameter. After tedious labor, birth occurred spontaneously in occipito-posterior position, efforts to rotate the occiput in front having failed. The puerperal period was normal.

CRANIOTOMY AT THE BERLIN FRAUEN-KLINIK.

DETERMANN (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band 15, Heft 2) reports 239 craniotomies, performed in 1.08 per cent. of the total number of labors. Craniotomy was performed less frequently than in other German maternities whose statistics have been recently published.

While contracted pelvis was the predisposing cause in 163 cases, excessive size of the fœtus demanded the operation in 130 cases; the decisive element in each case was disproportion between fœtus and pelvis, not absolute pelvic measurements. The living fœtus was perforated in 19 per cent. of cases; the after-coming head in 47 cases. With improvements in antisepsis and methods of operating, the mortality rate has diminished from 12.8 per cent. to 9.4 per cent.

Determann regards the modern Cæsarean section as a direct rival to craniotomy, and destined to supersede it.

AMPUTATION OF THE PREGNANT UTERUS, AN IMPROVEMENT ON THE MODERN CÆSAREAN SECTION.

TAIT (*British Medical Journal*, November 17, 1888), in reporting a second series of cases, draws attention to 3 amputations of the pregnant uterus, in which natural delivery was impossible, with 3 recoveries.

He operates by making an incision large enough to admit the hand; passes an unperforated drainage tube about the cervix, makes a single hitch in it, draws it tight, and gives it to an assistant. He then opens the uterus, enlarges the cut by his fingers, and delivers the child. The rubber tube is then tightened; sponges are packed about the cervix to keep blood from the abdomen, knitting-needles are passed through the tube and cervix, making a

clamp. The uterus is cut off three-quarters of an inch above the ligature, the stump dressed with perchloride of iron; the wound is stitched around the stump, which is brought to the lower angle of the wound.

Tait claims originality in method, simplicity, rapidity, safety, and success for this procedure for cases in which subsequent pregnancy should be prevented.

TWO CASES OF EXTRA-UTERINE PREGNANCY TREATED BY LAPAROTOMY.

RICHARDSON (*Boston Medical and Surgical Journal*, No. 23, p. 549, 1888) reports a case of pregnancy at about three weeks, almost in collapse; tenderness and an indistinct tumor existed close to the uterus, on the right; the abdomen was not enlarged. Laparotomy revealed hemorrhage from an enlargement on the right Fallopian tube near the ovary; tube, ovary, and tumor were removed; the patient rapidly recovered. Examination showed ruptured tubal pregnancy.

His second case was advanced abdominal pregnancy; the placenta was adherent to the intestines and posterior abdominal wall; it was largely removed, and drainage was secured by a tube passing through the posterior cul-de-sac into the vagina; recovery followed.

THE TREATMENT OF TUMORS IN THE PELVIS COMPLICATING PREGNANCY AND PARTURITION.

FEHLING (*Deutsche medicinische Wochenschrift*, No. 49, 1888) estimates the frequency of ovarian tumor, as a complication to pregnancy, to be 1 in 891 cases; they commonly grow rapidly during pregnancy and occasion great discomfort. Palliative treatment is generally useless. Ovariectomy may be performed with 9.5 per cent. mortality; pregnancy is interrupted in from 20 to 50 per cent. of cases. He advises ovariectomy when the tumor has become as large as an orange and causes disturbance; induction of labor and puncture of the cyst are not recommended. Should both ovaries be found diseased, the operator must remember that the removal of both is followed by hemorrhage from the uterus, as a rule, which would produce premature labor. Ovariectomy during labor is accompanied by a mortality of from 29 to 40 per cent. An ovarian cyst complicating labor should be pushed up into the pelvis; emptied by puncture through the vagina; or incised, emptied, and tamponed with iodoform gauze. Cæsarean section should supersede craniotomy on the living fœtus in these cases.

Fibromata increase largely during pregnancy; they frequently do not complicate labor; when they occasion delay they should be displaced. When this cannot be done, amputation of the uterus at the cervix gives the best results; Cæsarean section, when the incision passes through a fibroid, results in necrosis of the tumor and septicæmia.

Carcinoma causes abortion in from 30 to 40 per cent. of cases. Palliative operations and procedures during pregnancy are useless.

In carcinoma of the cervix the uterus should be extirpated at the second or third month; other measures are useless. When all hope of this operation is lost pregnancy should be maintained in the child's interests. At labor incision of the cervix may be required with the use of forceps; version is contra-

indicated. Craniotomy should be performed upon the dead fœtus; amputation of the uterus should be chosen when the fœtus is living.

A FINGER IRRIGATOR AND DOUCHE, CURETTE FOR PUERPERAL ANTISEPSIS.

AUVARD (*Archives de Tocologie*, No. 10, 1888) has found the ordinary methods of giving antiseptic douches inefficient because the fluid does not reach all portions of the vagina and cervix. He fastens a rubber irrigator tube on the palmar surface of an index finger by a rubber band, and directs the douche more efficiently. He has also devised a curette having a hollow stem through which an antiseptic solution flows, while the uterine wall is traversed by the blade of the curette.

PUERPERAL SEPSIS BY INFECTION FROM THE PERSON OF THE OBSTETRICIAN.

HEWETSON (*Lancet*, November 24, 1888) reports the case of a medical acquaintance suffering from failure of health produced by neglected purulent otorrhœa, with retention and absorption of septic matter. Inquiry disclosed the fact that a large proportion of his puerperal patients suffered from septicæmia. The cure of the physician was followed by the disappearance of septicæmia from his practice.

A second case is reported, in which an assistant suffering from syphilitic necrosis of the nasal septum communicated sepsis to a puerperal patient, with fatal result. The lesson of these cases is obvious.

AN IMPROVED DRESSING FOR THE UMBILICAL CORD.

EPSTEIN (*Prager medicinische Wochenschrift*, No. 43, 1888) has abandoned complicated dressings for the cord. He cuts it from one to one and a half inches from the umbilicus; strips it and powders it with salicylic acid and starch or iodoform; it is then enveloped in a little sack made of gauze allowing free access of air; this commonly comes away with the cord, as but a single dressing is needed.

In preventing thrush and all bacterial disease of the mouth and air passages, he believes it of primary importance that care be taken not to wound the mucous membrane by efforts to cleanse it or remove mucus. Interference is rarely needed if this precaution be observed. He recognizes the value of sterilizing milk given to infants, and finds fresh milk from a nursing woman free from germs.

THE MEDICO-LEGAL EVIDENCE OF CHILD-MURDER.

HOFMANN (*Wiener klinische Wochenschrift*, No. 23, 1888) reports the result of an official investigation by the faculty of the Vienna Hospital, in the case of a woman accused of child-murder, under the following circumstances: The mother, an unmarried woman, delivered herself of the fœtus in the night, extracting it manually from the vagina, without awakening a woman who slept in the same room. The fœtus was thrown into a canal, where it was

found seven days afterward, presenting the following appearance: It was eight months advanced, and well nourished. The left eye protruded, as in exophthalmus. Over the carotid and pneumogastric, upon each side, was a discolored, abraded surface, which apparently had resulted from the grasp, in throttling, of a human hand. The lungs floated in water, and the police surgeon who examined the body gave a diagnosis of fœticide by strangulation.

The hospital experts reversed the decision as follows: A careful examination of the bones led to the belief that the fœtus was not as mature as supposed. No microscopic examination of lung tissue had been made, and its buoyancy in water might have been caused by the presence of gases of decomposition. The discolored surfaces upon the neck extended along the carotids in such a manner that they might easily have been post-mortem staining from the bloodvessel, without violence. The mother undoubtedly made traction upon the neck in effecting delivery, but positive evidence of fœticide was wanting. The fœtus was premature, and death had resulted naturally, possibly in utero.

GYNECOLOGY.

UNDER THE CHARGE OF

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THE REMOVAL OF SUBMUCOUS FIBRO-MYOMATA BY LAPAROTOMY.

FREUND (*Centralblatt für Gynäkologie*, December 8, 1888) reports the following case: A patient, aged forty-five years, entered the hospital for the relief of profuse menorrhagia associated with an offensive discharge from the vagina, and considerable distention of the abdomen. On examination, a uniform enlargement was found in the median line, about the size of the pregnant uterus at the sixth month. Pregnancy was positively excluded. Under ether the finger could be introduced into the uterine cavity, where a large sessile tumor was felt on the right side near the fundus.

Removal of the growth per vaginam was considered impracticable on account of the length and rigidity of the cervix, and the site and sessile character of the tumor. Laparotomy was elected, with the alternative of either amputating the uterus, or opening it and removing the tumor. It was determined to begin with the latter procedure. The uterus was exposed through an ample abdominal incision, and was lifted out of the cavity. The vessels in the broad ligaments were greatly dilated. A rubber cord was placed around the cervix, the uterine wall was incised as in Cæsarean section, and the tumor was drawn out with a volsella. Its capsule was opened, and it was enucleated with the fingers. A second submucous fibroid of smaller size was removed in a similar manner. The uterine cavity was much enlarged, and the muscular wall at the fundus was thickened; near the middle of the poste-

rior aspect the wall was greatly thinned, bearing a close resemblance to the lower segment of the gravid uterus. There was general hypertrophy of the endometrium, which presented a mottled appearance, ecchymoses alternating with yellowish-white spots; at the fundus the mucosa was detached from the subjacent muscular layer and hung in loose folds. The ragged wounds marking the sites of the tumors were trimmed off, and the separated endometrium was united by fine sutures, the cavities which contained the growths being packed with aseptic gauze, one end of which was carried through into the vagina. The uterine cavity was then carefully disinfected and tamponed with iodoform gauze, which also protruded from the cervix. The uterine wound was closed with deep and superficial sutures according to the usual method. The uterus contracted well as soon as the tumors were removed, and did not become relaxed during the operation. There was only slight bleeding after removal of the rubber cord. Duration of the operation one hour and three-quarters. After-pains followed the operation, and forced out the larger tampon, the one at the site of the tumor coming away on the third day. The patient made a smooth recovery. At the end of four weeks the uterus extended only a finger's breadth above the symphysis pubis, was freely movable and painless. The former symptoms were entirely relieved.

PERI-URETHRAL SARCOMA.

THIEM (*Frauenarzt*, November, 1888, Heft II.) reports a case of this rare affection (with drawings). The patient was aged fifty-six years. The growth was as large as a walnut, and completely surrounded, without involving, the urethra, the latter being compressed against the arch of the pubes. The clitoris was entirely merged in the mass. A microscopical examination showed that the urethra was not affected, neither was the probable origin of the neoplasm apparent.

THE DIAGNOSIS OF ABDOMINAL TUMORS.

MINKOWSKI (*Berliner klin. Wochenschrift*, 1888, No. 31) speaks highly of artificial distention of the stomach and colon (the former with carbonic acid gas, the latter with water) as an aid in recognizing the exact relations of abdominal tumors, as practised by Naunyn in over one hundred cases. The stomach is first inflated by the introduction into it of bicarbonate of soda and tartaric acid, and the resulting displacement of the tumor is carefully noted. The gas is then withdrawn through a stomach-tube, and the colon is distended with water, the relative positions of the intestine and tumor being observed. As a result of a large series of observations the writer infers that when the stomach and large intestine are hyper-distended they displace the tumor *toward the normal site of the organ from which it springs*. Cases are cited in which the origin of hepatic, splenic, pancreatic, and ovarian neoplasms was thus ascertained.

Another aid in the differential diagnosis is the inspection of the abdomen from the side, whereby the examiner is able to note the point of greatest protrusion, as at the edge of the ribs on the right side in a case of hepatic tumor, in the lumbar region in a case of enlarged kidney, etc. The abnormal pro-

trusion of the artificially distended colon over a renal tumor is also to be noted. Minkowski considers the excursions of the tumor with the respiratory movements as an important point. After a deep inspiration the examiner fixes the enlargement; on expiration an hepatic tumor will be drawn upward with the diaphragm in spite of the efforts to restrain it. Neoplasms springing from the other abdominal viscera, if they are not adherent to the liver, can be prevented from rising during expiration.

TUBERCULOUS INFECTION TRANSMITTED THROUGH THE GENITAL TRACT.

DERVILLE (*Gaz. Méd. de Paris*, September 8, 1888) states that he has often found tubercle-bacilli in the vaginal discharges of women who gave a tuberculous history. It is difficult to attribute the infection to any other than a direct source, such as unclean instruments or syringes, or, more probably, to semen, which latter may be infected even when there is no positive evidence of tuberculosis of the urino-genital tract. The writer concludes that genital tuberculosis occurs in women more frequently than is generally supposed, and that it may be the first indication of disease which may subsequently involve the lungs or peritoneum. With regard to the prophylaxis, he recommends local cleanliness, both as regards sexual congress and vaginal injections and examinations.

Jacquot, in a thesis published in the same journal for September 22, questions the statement that tuberculosis can be transmitted during the sexual act. Genital tuberculosis is explained more intelligently by reference to the deposit of bacilli (which remain latent for some time) upon an organ which is the seat of traumatism or inflammation, just as in other cases of localized tuberculosis. Such prophylaxis as may be adopted consists in guarding against dissemination of the bacilli.

THE VALUE OF HYSTERORRHAPHY.

LEE (*American Journal of Obstetrics*, December, 1888) reports six cases of primary hysterorrhaphy, in four of which there was an undoubted cure. He regards it as not only a justifiable, but an indispensable, operation in cases of retro-displacement and fixation of the uterus, which resist all other modes of treatment, and in which the patient's sufferings are unbearable. If the uterus is movable, this constitutes *per se* a contra-indication to hysterorrhaphy, and calls for Alexander's operation. He disapproves of passing the sutures through the fundus uteri, and prefers Chinese silk to silkworm-gut. No death from hysterorrhaphy has yet been reported.

[Since the above was written we have heard of one immediate and one remote fatal result following this operation.—ED.]

TOTAL EXTIRPATION OF THE NON-CANCEROUS UTERUS.

FRANK (*Annales de Gynécologie*, December, 1888) would limit the operation to cases which have resisted all the ordinary means of treatment, and in which there is not too great risk for the patient, who should be of somewhat advanced age. It is sometimes necessary to perform it where removal of the

ovaries has been unsuccessful. Of twenty-five women operated upon all recovered, and were relieved of the obstinate pelvic pains which constituted the indication for the operation. In two instances hystero-epilepsy was not relieved by Battey's operation, but ceased immediately after hysterectomy was performed. [The writer draws the extraordinary lesson from these cases that it is wise to remove the uterus with the ovaries, since, after ablation of the latter, the womb "is a useless organ," which often becomes the seat of pain (!).—ED.]

VAGINAL HYSTERECTOMY.

THIEM (*Ibid.*) is strongly in favor of the operation, even in apparently doubtful cases. He calls attention to the fact that the greater number of operable cases encountered by gynecologists in Berlin is probably due to the fact that patients are better educated with regard to the importance of applying for treatment when serious symptoms are first observed. To clinics in the smaller cities of Germany, fed from the country women are sent by their physicians, who have not recognized the necessity of making a vaginal examination until the disease has become incurable. The attempt to obtain cicatrization in such cases by the use of caustics is often unsuccessful. Such palliative treatment produces only temporary benefit. When the entire uterus is removed, on the contrary, a firm cicatrix is formed, which frequently does not become the seat of fresh ulceration, the patient dying from metastasis rather than from a recurrence of the disease at the site of operation.

If a decided amelioration of the patient's condition follows palliative treatment, this is, in itself, an evidence that the case was not an inoperable one, and that total extirpation would have been followed by good results. Even in cases in which the parametric tissues are infiltrated an operation ought not to be refused, since it is not always possible to distinguish cancerous infiltration from simple inflammatory induration. Insurmountable difficulties in the technique should alone prevent the surgeon from performing a radical operation. Finally, there may be cases in which vaginal hysterectomy is justified for the cure of obstinate hemorrhage not of cancerous origin, on the same principle by which the surgeon amputates a limb to arrest bleeding which he cannot otherwise control.

[These radical views will hardly meet with general approval. The author makes too light of the technical difficulties in certain cases, and of the consequent danger that the patient may succumb to the operation.—ED.]

SECHEYRON (*Gaz. Méd. de Paris*, September 15, 1888) under this term includes all incisions made in the uterus per vaginam, whether in the cervix or in the body of the organ. It is employed not only to relieve stenosis and cicatrices, but in order to open the cervical canal sufficiently to allow the passage of the finger or instruments, and to remove intra-uterine growths. The following are to be regarded as contra-indications to the operation: 1. If the tumor is too large, *i. e.*, larger than a man's head. 2. If there are several tumors at the fundus. Under these circumstances vaginal hysterectomy or supra-pubic amputation may be preferable. In extirpating intra-uterine fibromata the writer prefers to split the cervix and the lower segment of the

uterus as high as the neoplasm, which he removes piecemeal, according to Péan's method.

PROLAPSE OF THE OVARIES.

VALLIN (*Thèse, Ibid.*, September 22, 1888) affirms that the ovary has normally a vertical position, occupying the *fosselle ovarienne*, or angle between the bifurcation of the iliac vessels; below it lies the *fosselle sous-ovarienne*, which is bounded posteriorly by the utero-sacral ligaments. It is quite movable (with the uterus) around a fixed point, which is the insertion of the infundibulo-pelvic ligament; prolapse of the organ is due to the relaxation of its supports from defective involution after pregnancy. Pain during defecation and coition are the most characteristic symptoms. Oöphorrhaphy is inapplicable, except to cases in which the ovary is not diseased. Pessaries afford but little relief. The writer favors vaginal oöphorectomy.

THE ACTION OF CERTAIN DRUGS ON THE UTERO-OVARIAN SYSTEM.

LOMBE ATTHILL (*Dublin Journal of Medical Science*, December, 1888) discusses the question, whether the ordinary drugs which are supposed to exert a direct action upon the uterus have any influence on the menstrual flow. Ergot, strychnine, and quinine were administered with negative results; the natural inference being that either these drugs did not cause contraction of the uterine muscle, or if this contraction occurred it had no effect on menstruation. Purgatives, such as aloes, can not be regarded as true emmenagogues. The writer has no faith in permanganate of potassium, which has been followed by no results whatever in his hands.

For the relief of ovarian congestion without actual disease of the ovaries, attended by menorrhagia, he has found the bromides especially valuable. Their administration must be begun five or six days before the period begins, thirty grains being given thrice daily. Ergot does not increase their efficiency. The latter drug (Squibb's) is the only one on which reliance can be placed in cases of hemorrhage due to intra-mural (*not* pedunculated) fibroids, but its action is uncertain. Hemorrhage due to malignant disease cannot be checked by drugs administered internally.

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SOME OBSERVATIONS ON AORTIC ANEURISMS, WITH A
REPORT OF THIRTY-FOUR CASES, WITH AUTOPSIES.¹

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THE observations recorded in this paper are based upon thirty-two cases of aneurism of the aorta and two cases of spontaneous rupture of the aorta without previous dilatation. With a few exceptions, all of the cases have fallen under my observation within a period of eighteen months, and most of them were seen first on the autopsy table.

It has seemed to me that aneurismal dilatation of the aorta is a more common affection than is generally supposed, and I desire in this paper to call attention to this and some other features of the disease that have not been sufficiently emphasized.

It is not the intention to take up the clinical history of aortic aneurism, for, as has been noticed, many of these cases were first seen at the autopsy.

Of the series of 34 cases, 30 were either fusiform or saccular dilatations of the aorta, with death from rupture or other causes in each. Of the remaining 4, 2 were dissecting aneurisms and 2 were simple ruptures of the aorta. No cases have been included in the series in which autopsies were not performed. Excluding the dissecting aneurisms and the ruptures of the aorta, in 26 of the 30 remaining cases the aneurisms were situated on the arch of the aorta and on the thoracic aorta; the other 4 were of the abdominal aorta.

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CASES OF AORTIC ANEURISM.

No.	Variety.	Situation.	Where ruptured.	Age	Sex	Occupation and habits.	History of aneurism.
1	Large, saccular,	Arch, ascending,	Pericardium,	43	M.	Laborer, drinker,	No.
2	Saccular,	Arch, one inch above valves,	Pericardium,	26	M.	Bookkeeper, drinker,	No.
3	Saccular,	Arch, in the sinuses above valves,	Pericardium,	40	M.	Officer U.S.A. drinker,	Yes.
4	Fusiform,	Arch, ascending,	Pericardium,	50	F.	Domestic,	No.
5	Saccular,	Arch, just above valves,	Pericardium,	35	M.	Clerk,	No.
6	Saccular, double,	Arch, just above valves,	Pericardium,	50	M.	Clerk,	No.
7	Fusiform,	Arch, ascending,	Pericardium, pin-hole perf.	30	M.	Watchman,	No.
8	Saccular,	Arch, descending and transverse,	Left pleura and lung,	31	M.	.....	No.
9	Fusiform,	Arch, just above valves,	Pericardium,	28	M.	Confectioner,	Cardiac symptoms.
10	Saccular,	Arch, transverse and descending,	Left bronchus and lung,	50	M.	Laborer, drinker,	Yes.
11	Saccular,	Arch, transverse and descending,	Left bronchus,	47	M.	Carpenter, drinker,	Yes.
12	Saccular,	Arch, ascending and transverse,	Pericardium,	67	M.	Coachman (negro),	No.
13	Saccular,	Arch, descending,	Spinal canal,	...	M.	.....	Yes.
14	Dissecting,	Whole arch and thoracic aorta.	Pericardium,	...	M.	.....	Not known.
15	Saccular,	Arch, ascending,	Pericardium,	...	M.	Laborer,	No.
16	Saccular and double fusiform,	Arch, and thoracic aorta,	Right pleura,	33	F.	Laundress,	Yes.
17	Saccular and fusiform,	Arch, ascending just above valves,	Esophagus,	40	M.	Laborer,	Yes.
18	Dissecting,	Whole arch and thoracic aorta,	Pericardium,	42	M.	Ferryman,	No.
19	Saccular, five,	Ascending portion of arch,	Pericardium,	...	M.	.....	No.
20	Saccular,	Arch, transverse and ascending.	Left lung,	38	M.	Coachman,	Not until day before death.
21	Saccular,	Arch, ascending and transverse,	Pericardium,	45	F.	Domestic,	Yes.
22	Saccular,	Arch, ascending and transverse,	Right pleura,	...	M.	Laborer,	No.
23	Saccular,	Arch, ascending,	Pericardium,	...	M.	Laborer,	No.
24	Saccular(4) and fusiform,(2)	Arch, and thoracic aorta,	Not ruptured,	59	F.	Domestic.	Yes.
25	Saccular (enormous),	Abdominal aorta,	Abdominal cavity,	...	M.	.....	Yes.
26	Saccular,	Abdominal aorta,	Retro-peritoneum,	...	M.	Laborer,	No.
27	Saccular,	Abdominal aorta,	Peritoneum,	...	M.	Laborer,	Yes.
28	Saccular,	Aorta, thoracic,	Left pleura and lung,	50	M.	Mechanic,	Yes, but aneur. not found.
29	Saccular,	Abdominal aorta,	Peritoneum,	40	M.	Laborer,	Yes.
30	Saccular,	Aorta, thoracic,	Left pleura,	48	M.	Laborer,	Pain only.
31	Saccular,	Aorta, thoracic,	Not ruptured, pneumonia,	68	F.	Domestic,	No.
32	Saccular (enormous),	Arch, transverse,	Not ruptured,	60	F.	Domestic,	Yes.

CASES OF RUPTURE OF AORTA.

No.	Variety and situation.	Where ruptured.	Age	Sex	Occupation.	History of aneurism.
1	Rupture at point of calcification one inch above the valves,	Left pleura,	50	F.	Domestic,	No.
2	Rupture one and a half inches above valves; coat thin,	Pericardium,	50	M.	Ironworker, drinker,	No.

The 26 cases of aneurism of the thoracic aorta, not including the dissecting aneurisms, were distributed as follows: 12 were of the ascending portion of the arch (many of them were situated just above the valves in the sinuses); 4 were situated at the junction of the ascending with the transverse portion of the arch; 1 was confined almost entirely to the transverse aorta; 3 were situated at the junction of the transverse and descending portions of the arch; and 4 arose from the descending portion of the arch and the thoracic aorta, and in two cases multiple aneurisms involved the whole arch and thoracic aorta.

As to the character of the aneurisms in those cases in which only one aneurism was found—*i. e.*, in 27 cases—21 were saccular, 4 were simple fusiform, and 2 were dissecting aneurisms. Where the aneurisms were multiple—*i. e.*, in 5 cases—in each of two there was a fusiform and saccular, and in one there were two and in a second five saccular aneurisms. In the fifth case there was a double saccular aneurism of the transverse portion of the arch, a fusiform and beginning saccular of the ascending arch, and a fusiform and saccular of the descending arch. Simple fusiform aneurism of the aorta (not including the dilatations of the ascending portions of the arch, which are very common in old age) are comparatively infrequent; there were only 3 examples of this kind in 32 cases of aortic aneurism.

Sixteen of the ruptures opened into the pericardium, 2 into the left pleura, 2 into the right pleura, and 2 into the left pleura and lung, and 1 each into the œsophagus, left bronchus, left lung, left bronchus and lung, spinal canal, and retroperitoneal connective tissue, and 3 into the peritoneal cavity. (In 3 cases death occurred from some other cause without rupture.)

The average age of those whose age was obtained was $44\frac{1}{2}$ years. The oldest was 68 and the youngest was 26. As to sex, 7 were in females and 27 in males. The females (9 in number) were all domestics by occupation. Of the males, all but 6 were engaged in some laborious occupation, such as laborers, firemen, mechanics, iron-workers, and 6 were either clerks, book-keepers, or in a higher sphere of life.

The histories were in many cases imperfect, but in only 5 was there a clear specific history obtained, or were there other lesions than the aneurism found at the autopsy significant of syphilis. An alcoholic history was given in 6 cases, and was probably present in many more.

In the 28 cases of thoracic aneurism, a history suggestive of aneurism was present in only 11 instances. In 7 of these 11 cases the aneurisms were situated at or beyond the junction of the ascending and transverse aorta. In 9 out of 12 aneurisms situated wholly on the ascending portion of the arch of the aorta, there was no history suggestive of aneurism. In several of the cases in which symptoms suggestive of aneurism were present, they were not so distinctive that a diagnosis

could certainly be made, although the patients were under observation for some time previous to death. The aneurisms of the abdominal aorta, with one exception, were all made out during life, and gave characteristic symptoms.

The mode of death due to aortic aneurisms is interesting. In almost every case in which a second person was present at the time of decease, death was almost instantaneous. In one instance a man in apparently perfect health, while making a social call, sank back on a couch on which he was sitting, gasped once or twice, and was dead. Rupture of an intra-pericardial aneurism was found at the autopsy. Another case is interesting from a medico-legal standpoint: the patient, apparently a strong, healthy man, was struck on the head and chest in a drunken brawl; he fell to the ground and died immediately. At the autopsy a ruptured aneurism was found. (The degree of responsibility of the assailant is not easy to determine in such a case; and the case is still in the courts. Before the autopsy death had been assigned to his injuries. The importance of autopsies in such cases was here well illustrated.)

In a number of cases there were several attacks of hemoptysis some time before the fatal hemorrhage occurred, and in every instance these hemorrhages were ascribed by the physician in charge to pulmonary tuberculosis. The autopsy revealed no such lesions. In these cases rupture occurred first into the lung, and then the blood made its way into the pleural cavity. In all of these cases pulmonary hemorrhage occurred before and at the time of death, and in two of them a large amount of blood was found in the stomach. Unless great care is taken in the examination in such cases, the pleural cavity would be regarded as the site of rupture, as the *lung usually contains but little blood after death*, and, excepting the pleura covering it at the point of rupture, shows no lacerations in its tissues; yet the blood may make its way through the bronchi, larynx, pharynx, and œsophagus into the stomach. Reference has been made in several English reports on thoracic aneurism to a number of cases in which hemorrhage from the mouth occurred, with the comment that the cause of the hemorrhage was not clear. These were probably cases of this kind in which there were adhesions between the aneurismal sac and lung, and in rupture the blood, in part, made its way into the lung.

In 11 cases death occurred instantly, the subjects dropped dead in the streets or at their work without warning. In a number of instances the subjects were found dead either in bed or where they had been working, death having apparently taken place suddenly and without pain or other symptoms.

Contrary to what would *à priori* be supposed, death occurred in but few instances during severe muscular exercise. As a rule, there was no apparent immediate cause for the rupture, as it occurred during sleep

or at times when there was no unusual muscular exertion. This was also true of the two cases of rupture of the aorta; one occurred when the patient was lying quietly in bed, and the second while the patient was returning home from work. This is a rather remarkable fact, and does not tend to confirm the usual opinion that severe strains have so large an influence as has been ascribed to them in the production of the dilatation and rupture of the aorta.

Nevertheless, the site of the aneurism, as regards frequency, corresponded pretty closely with the site of the greatest strain on the aorta, *i. e.*, the largest number were situated on the outer surface of the ascending portion of the arch, a short distance above the valve and at the junction of the transverse and ascending portions of the arch; then at the junction of the transverse and descending portions of the arch and on the thoracic aorta. Not one of this series arose from the concave surface of the arch, a position rarely occupied by aneurisms, although the writer has met with them. One or two came from the anterior face of the thoracic aorta.

As is the rule with aortic aneurisms, the majority were of the saccular variety. In a number of instances a saccular aneurism was superimposed upon a fusiform dilatation of the artery.

The two cases of rupture of the aorta are interesting. Primary rupture of the aorta without previous dilatation is of infrequent occurrence. When it does take place it is usually due to rupture of the artery at some point of disease in the coats, and rarely it occurs where there is no evidence of absolute disease, but apparently only thinning of the coats. Probably, however, in these cases the thinness of the coats is due to the degeneration and loss of elasticity in the media. The first case of rupture occurred in a female patient suffering with tubercular peritonitis. The aorta was the seat of endarteritis, and the point of rupture was about one and one-half inches above the aortic valve, at a place where calcification had taken place, and a calcific plate had broken through the superficial layers of the intima. There were also changes in the media, and the blood had made its way directly through the outer coats into the left pleural cavity. The rupture occurred while the patient was confined to her bed, when her death was daily looked for from the tubercular peritonitis.

In the second case the patient was an iron-worker, fifty years of age, and apparently in perfect health. While going up stairs, after returning from his work, he was suddenly seized with a very severe pain in his chest, attended with considerable dyspnoea. A physician was at once summoned; he prescribed some simple remedy, and told him he would soon be well. A few minutes later he died. At the autopsy the pericardium was filled with blood, and a transverse rupture of the aorta one inch in length was found about an inch above the valves. There were

a few small spots of sclerosis and atheroma in the artery, but at the point of rupture there was very little change apparent in the coats, only that they seemed to be somewhat thin.

Dissecting aneurisms of the aorta are more properly classed with ruptures of the aorta than with aneurisms proper. They always commence by a rupture of the intima. Then the blood penetrates between the layers of the middle coat or between the middle and external coat. Later, there is rupture either back again into the lumen of the artery, or, what is more frequent, externally. They differ from cases of rupture only in the greater resistance of the outer coat of the vessels. The history of one of the cases of dissecting aneurisms was like that of the cases of rupture, only that death did not occur so early. The patient, while at work, felt severe pains in the pericardium; returned home; his wife went for a physician, leaving him alone, and when she returned he was found dead. At the autopsy in this case the pericardium was filled with blood, and a rupture was found about one inch above the valves. The layers of the middle coat were separated (forming the aneurismal sac) as far as the abdominal aorta. I have no notes as to the mode of death in the second case of dissecting aneurism.

It has seemed to me a very noteworthy fact that in seventeen out of the twenty-eight consecutive cases of thoracic aneurism and in the two cases of rupture of the aorta there were no symptoms present marked enough to attract the attention of the patients or to cause them to consult a physician. Although it has been often noted that intrapericardial aneurisms situated in the sinuses just above the valves are frequently unattended by marked symptoms previous to rupture, the fact has not been emphasized that aneurisms situated at other points on the arch of the aorta are similarly unattended by symptoms in so large proportion of cases. There must be some explanation for the very large proportion of such cases in this series, and it is to be readily found. They are almost all cases of sudden death, which would properly come under the notice of the coroner. Many of them were seen through the courtesy of Dr. Jenkins, Deputy Coroner. The large proportion of the remainder were cases of sudden death among the inmates of the almshouse and workhouse on Blackwell's Island. These, too, were properly coroner's cases, but by the courtesy of the coroners the autopsies on such cases are made at the hospitals by the medical staff.

As all cases of sudden death without medical attendance become coroner's cases, it is natural that we should here find classed the large majority of cases of death from ruptured aneurism. Where sudden death occurs with no suspicious circumstances, it is unusual for the coroner's physicians to make post-mortem examinations. Hence it is that these cases of sudden death from rupture of aortic aneurisms do not come frequently under observation on the post-mortem table. They

occur in the service of the coroner, autopsies are not usually made by them, and the cause of death is assigned to heart disease or apoplexy. If the subjects are among the poorer classes, the physician who is called in at the time of death does not care to make an autopsy, and among the better classes, where they are more infrequent, autopsies are but rarely performed. Dr. Jenkins, who has had a large experience in this work and who has made many careful observations on this subject of sudden death, has arrived at the conclusion that rupture of thoracic aneurism is one of the most frequent causes of sudden death unaccompanied by previous severe symptoms. This observation I can entirely confirm. Heart disease and cerebral hemorrhage are the two conditions that are usually supposed to be the cause of sudden death. But in the large majority of cases of sudden death from valvular disease of the heart, there have been characteristic symptoms of the cardiac affection for some time preceding death. In diseases of the *myocardium*, absence of symptoms is not infrequent. Again, in cerebral hemorrhage it is the exception for death to occur immediately. Patients live for some minutes or some hours at least. In rupture of thoracic aneurisms death is usually almost instantaneous.

That these cases are much more frequent than is generally supposed, is shown by the large number that have fallen under my observation in this short period. They have been so frequent, not from a coincidence I believe, but because a class of cases have been examined that ordinarily do not come under observation on the post-mortem table. During this period I have not met with many cases of ruptured thoracic aneurism in the autopsies at Bellevue and Charity Hospitals.

The presence of foreign bodies in the air-passages and uræmic convulsions are causes of sudden death which should be mentioned in this connection. These five conditions—*i. e.*, cardiac affections and especially diseases of the *myocardium*, rupture of thoracic aneurisms, cerebral hemorrhages, uræmic convulsions, and foreign bodies in the air-passages—and in the order named, I believe are the most frequent causes of sudden death in adult life without marked previous symptoms. This is, of course, excepting traumatism, poisoning, etc.

A remarkable instance of the freedom from marked symptoms and absence of physical signs so frequently seen in large multiple aneurisms, was presented in one of these cases. The patient noticed a small pulsating tumor just above the left sterno-clavicular junction. She did not complain of this or seem to suffer much discomfort from it. Aside from the pulsations, the presence of a very slight single murmur over the tumor and an area of slight dulness situated on the right of the median line over the sternum on a level with the second rib, there were no signs or symptoms of aneurism. The patient died from an intercurrent affection, and the autopsy revealed the presence of a large dilata-

tion of the ascending portion of the arch with a small saccular aneurism arising from it, and also a second saccular aneurism, size of a small lemon, arising from the junction of the ascending and transverse arch, with a third saccular aneurism superimposed upon it. The second and third had extended across the mediastinal space, and the third had presented at the left sterno-clavicular junction. On the anterior aspect of the descending portion of the arch and the thoracic aorta there was another large fusiform dilatation with a fourth saccular aneurism arising from it. Aside from the signs mentioned above, there were no murmurs, no signs of pressure, no pain or discomfort, excepting that produced by the small tumor in the neck, notwithstanding the very extensive involvement of the aortic arch and the thoracic aorta.

Another case in this series also well illustrates the great freedom from very marked symptoms in some cases of extremely large aneurisms of the aorta. In No. 32 of the series, the patient was a helper in Charity Hospital. She was supposed to have a cardiac affection, but continued her work and it was not thought to be of very great moment until a short time before her death. No diagnosis of aneurism was made. At the autopsy an enormous aneurism of the ascending and transverse aorta was found that filled a large part of the thoracic cavity. It was about six by eight inches in diameter, and had displaced the heart so that the base was situated low down in the right mammary line. The apex was in the epigastrium. The left lung was compressed and pushed to the rear so that its anterior border extended but little in front of the left axillary line. There was no great pressure upon the thoracic walls at any point, and no erosions of the bones. An enormous clot of stratified fibrin occupied the front of the aneurismal sac, and the current of blood had flowed back of this in its course from the cardiac opening of the aorta to the beginning of the descending portion of the aortic arch. The sac had not ruptured.

As to the pathology of aneurismal dilatation of the aorta, it has seemed to me that far too much emphasis has been ordinarily placed on the influence of endarteritis and atheroma as applied to the intima. These are not the changes that usually or necessarily precede the formation of dilatations, and in themselves, if they do not produce a secondary process in the media, are not followed by dilatation at least in the aorta. The changes that precede dilatation of the aorta in the majority of cases are situated in the middle coat, and may or may not be accompanied by changes in the intima. They seem to be of a degenerative nature rather than inflammatory. There is granular disintegration and disappearance of the elastic fibres and fatty degeneration in the muscle cells. The middle coat often has almost disappeared in small saccular dilatations, when the intima is unaffected or only slightly thickened. In those cases when the process is a rapid one and

when rupture occurs early, there is frequently little or no new growth of connective tissue and few or no infiltrated leucocytes in the degenerated media. When the process is slower or later in the course there is often a secondary new growth of connective tissue. But this, it seems to me, is not inflammatory in its nature and is not primary, but it is a fibrous hyperplasia, is secondary, and is to be regarded as a conservative process. After the degeneration of the muscular and elastic fibres, these are not reproduced, but in the attempt at repair their place is taken by new-formed fibrous connective tissue. This is a kind of fibrous hyperplasia—a scar tissue. That simple atheroma and endarteritis do not usually produce the changes preceding dilatation, is shown by the absence or slightly marked character of these processes in many cases of rapidly forming aneurisms, and by the very extensive changes of this nature that are often present without dilatation. In fact, in my own experience in those cases in which there was the greatest change in the intima, as a rule, no dilatation or very slight dilatation was present.

In small saccular dilatations one-fourth or one-half of one inch in width of rapid formation, I have found in a number of instances at the point of dilatation absence, or almost complete absence, of the middle coat. This had disappeared first at the point of dilatation on each side of the sac. The intima in some cases showed marked changes, and in others only very slight changes in structure. Occasionally the process in the media is inflammatory in character, and is properly designated a mesarteritis; but these cases are the exception rather than the rule. In them the adventitia is also often involved, and a dense round cell infiltration is found around the vasa-vasorum.

The etiology of aortic aneurism is somewhat obscure. Theoretically, there are two possible series of influences which may produce dilatation of an artery: first, anything that diminishes the resistance or elasticity of the arterial coats, and, second, anything that increases the arterial tension. The second influence—*i. e.*, increase of arterial tension—probably cannot produce dilatation unless there has been preceding it some change in the coats of the artery. As regards the first influence, any disease of any of the arterial coats will produce some diminution in the resisting power or elasticity of the artery, and so will predispose to aneurism. But it is especially the middle coat that gives strength to an artery, and it is disease of this coat that is followed by dilatation. It has occurred to me that the changes found in the arterial coats in aortic aneurisms are such changes as would naturally be produced by disturbance of the blood supply to the walls of the arteries. An endarteritis affecting the vasa-vasorum of the aorta would result in similar changes in the arterial walls. I have not been able to demonstrate such a change in the cases thus far examined, but believe they must be often present.

There can be no question, I think, about the influence of syphilis in

the production of aneurisms, and there are many reasons for regarding this disease as the chief factor in their causation. The degenerative changes in the middle coat which precede the formation of aneurisms are such changes as might be produced by syphilis. Then in a large proportion of cases, aortic aneurisms are found in the class of persons most likely to have been the subjects of syphilis. Further, very frequently, where an accurate and reliable history can be obtained, the patients are found to be syphilitic; and, finally, the influence of syphilis in the production of other forms of arterial disease cannot be questioned. (A syphilitic endarteritis (obliterating) affecting the vasa-vasorum would account for these cases, and would explain the acute dilatation that sometimes occurs in syphilitic subjects.) On the other hand, other influences that have been supposed to result in the production of aneurisms are far more frequently present unaccompanied by such changes. Severe muscular exercise and strains can only be active in the production of dilatation where there have been antecedent morbid changes in the arterial walls.

From these and other considerations, it has seemed to me—although the question is far from being settled—that syphilis is probably the most active agent in the production of aneurismal dilatations of the aorta. It does not follow that it is also the most active agent in the production of aneurisms of the smaller arteries. A history of syphilis, however, was only obtained in a very small proportion of the cases in this series.

It is not easy to determine the exact influence of strains or severe muscular exercise in the production of aneurisms, but there can be little doubt that primarily, or secondarily, they play a considerable part in their causation. But that increased arterial tension or strains, such as would produce hypertrophy of the heart, are not ordinarily present in the formation of aneurisms, is shown by the absence of cardiac hypertrophy in these conditions. Enlargement of the heart is the rare exception in my experience in simple uncomplicated cases of aortic aneurism, even if they are of large size and multiple. It is only found where other causes of hypertrophy are also present, such as affections of the myocardium or the valves or general arterial disease.

The suggestions I would throw out from this series of cases, recognizing the fact that they are based upon a comparatively small number of observations, are :

1. That aortic aneurisms are more frequent than is usually supposed.
2. That rupture of aortic aneurisms and rupture of the aorta together form one of the most frequent causes of sudden death occurring without previous symptoms.
3. That very frequently indeed aortic aneurisms give no signs of their existence, or, at least, very indefinite ones until rupture occurs.

4. That the comparative frequency of rupture of aortic aneurism as a cause of death has largely escaped notice, because in this country this class of cases does not often come under observation on the post-mortem table. Death occurs suddenly without previous symptoms, and, without an autopsy, is charged to heart disease or cerebral apoplexy.

5. That syphilis forms a large and, perhaps, the largest factor in the production of aneurisms of the aorta. This disease of the middle coat is perhaps often secondary to disease of the vasa-vasorum.

6. That when dilatation of the aorta occurs, in the large proportion of cases it follows disease of the middle coat, which is in the nature of a degeneration, and not an inflammation.

I am indebted to the great courtesy of Dr. W. T. Jenkins, Coroner's Physician, for the opportunity of seeing many of the cases reported in this paper. It was in the service of the coroner that a large proportion of the cases of ruptured aneurisms first came; and I would especially acknowledge my obligations to Dr. Jenkins for having first directed my attention to the frequency of rupture of aortic aneurisms as a cause of sudden death.

ON RESECTION OF THE LONG BONES.

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CONSERVATIVE surgery can claim few greater successes than those by which limbs have been saved from the amputating knife, restored from deformity to symmetry, from ankylosis to mobility, or from weakness to stability. These triumphs show that the surgery of the long bones has not lagged behind that of other departments. Some of the greatest successes have been in connection with subperiosteal resection. Unfortunately, the advance has not been all along the line; and has been least in one of the most numerous and important classes of bone disease.

Osteitis terminating in necrosis is treated very much the same now as it was a generation ago, although the fearless application of sound principles is capable of doing as much for bone diseases as for those of other tissues—more, indeed, for in no other tissue are the reparative processes of nature so fraught with obstacles to the surgeon, or deformity to the patient. Yet there are no inflammatory processes in which a policy of delay is more strenuously inculcated by even the most recent textbooks.¹

Bone affections are exceedingly prevalent in Kashmir; and my experi-

¹ Heath's Dictionary of Surgery. Erichsen, etc.

ence, which amounts to several hundred operations for such, has led me to formulate for myself more precise rules than are usually taught. It is especially of the resection of the shafts of long bones that I now write. Of these, since 1882, I have removed about twenty-five more or less completely and for various conditions of disease.¹ In dealing with osteitis and its results, the surgeon's efforts are directed, in the early stage, to efficient drainage of the portion of bone chiefly affected, whether it be the periosteum, cancellous tissue, or the medulla; in the later stages to the removal of pus and sequestra in such a way that the strength of the bone and its proportions may be conserved or restored.

1. What position does subperiosteal resection occupy as a means of treatment?

A short glance must be taken at the nature of the inflammatory processes, in immediate relation to operative methods.

Inflammation of a bone is seldom confined to one portion of that tissue. Our ordinary nomenclature—periostitis, epiphysitis, etc., is useful; but it is seldom that one of these diseases occurs uncomplicated. Periostitis shades off into osteitis, and epiphysitis into endostitis. But these portions of the bone are affected in different degrees, just as different parts of the same tissue usually partake unequally in the inflammation.

Thus the same process, varying in its seat and its intensity, leads in one part of the surface to the formation of osteophytes, and in another to pus; in one part of the dense tissue to sclerosis, in another to necrosis, each reacting in some way on the neighboring portions of the bone. Herein lies the difficulty of accurate surgical interference, but also the danger of delay.

In other tissues pus may form, but necrosis or gangrene of them from inflammation is rare. The unyielding nature of osseous tissue is the cause of the serious effects which follow almost any acute inflammation in it. That these effects are not more severe in all cases, is due to the loose-textured medulla which acts as a reservoir at the outset; and at a later stage to the rapid enfranchisement of the narrow blood channels by osseous absorption. Thus it follows that periosteal and bone drainage at the right time may save many a case from necrosis. Nevertheless, there still remains a considerable number of cases in which necrosis is inevitable; while a very large number of cases present themselves in which the necrosis, although quite preventable if timely treatment were adopted, has developed before the case is seen by the surgeon.

2. Primary resection is applicable to those cases in which more or less general necrosis is inevitable. They are, fortunately, not common. Acute suppurative periostitis with complete separation of the periosteum

¹ See Appendix.

from the shaft may be cured simply by drainage. I have seen several cases of this; mostly in the very young, but one in a lad of seventeen years, with an abscess (subperiosteal) completely encircling the whole femur.¹

Acute epiphysitis, or central osteitis, may subside after drilling.² But there is a combination of these in which the whole blood-supply is completely cut off; a *panostitis* in which within a few days the diaphysis is separated from one or both epiphyses, the periosteum is distended and separated from the whole shaft, and the medullary cavity is filled with pus. Even at this stage drainage may do much, but it is only a half measure. Resection is clearly indicated; and the following case shows what it can accomplish:

CASE I.—S., æt. fourteen, admitted to Kashmir Mission Hospital October 30, 1886.

History. Swelling began at ankle twenty-eight days previously, and gradually extended up leg; abscess burst twelve days ago.

Present state. Very emaciated, high fever; sinuses over front of tibia and over internal malleolus, with abundant discharge of pus. The probe passes up and down the whole surface of bone, which is bare and in parts rough; through the lower sinus it passes into the bone.

Operation. An incision was made over the whole length of the shaft of the tibia, which was then removed. The lower end being already half separated from the epiphysis, scarcely required the use of any instrument; the upper end was severed with a chain-saw. The periosteum and skin were accurately apposed by sutures, and a large sized drainage tube inserted at the sinus over the internal malleolus the whole length of the cavity. Both epiphyseal surfaces were rotten and purulent, and the bone infiltrated with pus; on the surface were a few thin irregular patches of new bone. The skin wound united primarily, the fever at once ceased, and the discharge diminished. On the fiftieth day the tibia was quite firm and well-formed, although not quite rigid. The patient left the hospital a few days after, strong and well, but with a slight limp. In the following March he returned to show himself, having walked the previous day sixteen miles from his home, to which he intended returning the same day. The limb in appearance and usefulness was equal to its fellow; but shorter than it by a half inch, and at the calf rather thicker. The tibia was of the normal triangular outline, tapering slightly in the lower third.

In total necrosis separation of the shaft may spontaneously occur very quickly. The whole process may be completed in a week or ten days. Its removal by the surgeon is then a simple matter. A few periosteal adhesions may have to be stripped off, with the finger or otherwise, and the shaft then withdrawn through a small incision at either extremity. More often the separation is partial, and only at one end of the diaphysis,

¹ See, special discussion, Clinical Society, London Lancet, i. p. 573, 1877; and at Medical Society, London Lancet, i. p. 303, 1886.

² Macnamara: Diseases of Bones and Joints. 3d edition, p. 126. Kashmir Mission Hospital Reports, 1882-1887.

which may then be removed with a chain-saw in its continuity, or with a chisel at its other end, according to circumstances. I have thus removed not only the tibia and fibula, but the femur, humerus, clavicle, radius, and ulna.

Perhaps the clearest of all cases for primary resection are those of acute periostitis, sometimes called osteomyelitis, following fracture. These have been far too often submitted to amputation. Of this the following case is a good example:

CASE II.—A boy, aged eleven years, fell from a tree and sustained a compound fracture involving the shoulder-joint. I removed the head of the bone and a small portion of the protruding shaft. But osteomyelitis led to suppuration of the lower epiphysis, which again involved the periosteum. Incising the abscess I found the whole lower portion of the shaft bare, and the epiphyseal line eroded. Completing the separation I withdrew the shaft. An almost perfect result was obtained. The periosteal tunnel rapidly filled; suppuration ceased; the elbow synovitis at once subsided; the new shaft at first larger than its fellow and flexible, became bony and of normal size. When he left the hospital at the end of ten weeks he had a useful limb, though of deficient muscular power, and slightly restricted range of movement at the shoulder.

Spontaneous fracture not uncommonly happens. From many examples I select the following case as most noteworthy:

CASE III.—*Diseased femur and knee-joint; spontaneous fracture; resection of femur; drainage of joint; recovery.*—Gafara, aged fourteen years. Thigh first became swollen a month before admission. Three weeks later the thigh broke and bone projected.

State on admission. Three inches of shaft of femur projecting from a large wound near the knee-joint, with which it freely communicated. The lower two-thirds of the thigh riddled with abscesses.

Operation. I resected with a chain-saw eight inches of the shaft of the femur, and inserted a large drainage tube through the knee-joint, emerging posteriorly. The portion removed proved on section to be infiltrated with pus to within an inch of its upper end. The lower epiphysis—i. e., the condyles—had a smooth fractured surface. The progress was very satisfactory, although the abundant discharge for the first week was rather alarming. About the tenth day marked improvement began. Unfortunately, the weight used for extension was too heavy, and causing ulceration, had to be altogether discontinued; otherwise he did well. The last drainage tube was removed on the seventh week, by which time a very massive femur had been formed. There being some flexibility at the junction of the new shaft with the condyles, a plaster splint was applied and he went home.

A few days later he returned for removal of the splint and was photographed. At this time the bone was rigid, very massive, and shortened about three inches. He could stand, but not walk. The knee was partly ankylosed. There seemed every prospect that, in a short time, with increasing strength, he would gain ample power and mobility in the limb, which would increase in length from both epiphyses, and not remain permanently as shortened as at present.

I have already indicated as subjects for primary resection, cases in which extensive necrosis cannot be avoided. That they should be operated on in this—the pre-sequestrial stage—may be deduced from a consideration of the process of sequestration.

This consists of three stages. There is the separation of the necrosed portion by the action of granulation. Contemporaneous with this is the process of splinting or “scaffolding” the shaft; the healthy osseous tissue being strengthened by interstitial deposit, and the periosteum actively organizing an outer layer of bone; nature thus providing, in most cases, for a maintenance of the strength and continuity of the limb.

The third stage, less understood than the former, consists in an absorption and remodelling of the new bone; tending to spontaneous extension of the sequestrum and approximation of the new to the characters of the old shaft.

It is marvellous to what perfection nature attains, and how many-sided are its processes; but it works “exceeding slow.” I have seen a case of twenty years’ duration with the sequestrum still incarcerated.¹

The natural cure is, moreover, beset by the Scylla of septicæmia and the Charybdis of waxy disease.

A very large proportion of the subjects of acute bone disease succumb to its effects before any sequestrum is fairly separated. My list of nearly two hundred major operations for disease of the long bones shows only two deaths. One was in a lad suffering at the time of admission from septicæmia. Amputation was asked for, and being refused, I merely drained the bone. After a week’s treatment he was removed home, and shortly afterward died.

The other was a case of necrosis of the femur and spontaneous fracture. I resected the lower fractured portion, and the wound did well; but the other half was also diseased, and the child sank after four months’ suppuration. This case was at the beginning of my experience. Complete resection would have almost certainly saved the child’s life.

Early operation and complete removal of the disease are attended with practically no risk to life. Within a few days the weakest patient begins to gather strength.

Now, if the necrosed bone can be removed with completeness, and a useful limb be retained, it is obvious that the sooner it is done the better.

The natural method is not only dangerous to life, and slow, but it also labors under inherent imperfections. Nature throws out osseous splints, which are an obstacle to the extension of the sequestrum.

The formation of a bony case over necrosed bone resembles the method by which a fracture is naturally splinted, by an abundant provisional callus. Admirable as this is in design, the surgeon prefers to apply

¹ Similar cases have been reported by Spence, vol. ii. p. 232; and Bryant, *Lancet*, vol. i. p. 10, 1879, etc.

external splints, and by preserving immobility to restrain the outcrop of callus.

So, too, in the case of necrosis, the surgeon does not want an osseous case external to the old shaft; he wishes the necrosed tissue to be replaced by healthy.

If the sequestrum be present, the new bone is formed in the wrong place. It constitutes a deformity. Moreover, it offers an obstacle to the removal of the sequestrum; and much of it may require to be cut away. The architect, wishing to repair a pillar, supports the roof by a temporary scaffolding; he does not encase the pillar in brick.

Surgical opinion is yet very backward on this point. The question of early resection was raised, many years ago, by Mr. Holmes. Since then, at rare intervals, cases have been published. But the standard surgical text-books, Heath's *Dictionary*, Erichsen, etc., either ignore, or mention only to condemn. Jones, although quoting Holmes, has evidently never tried resection of long bones himself, and is unfavorable; but Macnamara has had some successful cases, but more as a *dernier ressort* and substitute for amputation than as a primary method.

3. The stock objections are two: that the surgeon cannot gauge the extent of the necrosis, and that the stimulation of the sequestrum is necessary for the formation of the new bone.

I take up the second objection first. It is best met by an appeal to facts, and, as far as my own experience goes, I can speak decidedly on the point. In none of my cases of primary resection has there been any lack of osteogenetic reaction.¹

It must be remembered that the shaft is removed at a time when the periosteum is actively secreting pus. I have already stated it as a clinical fact, that excessive irritation of that membrane produces *pus*, but less irritation *bone*. Now, in cases of acute necrosis the periosteum may continue to pour forth pus for months, while forming but little bone. In these very cases, if the necrosed (or necrosing) bone be removed, the inflammation at once becomes formative.

The first resection I ever performed was of this type. The shaft was bare, and there was abundant discharge from several sinuses, yet the periosteum was little thickened. The history pointed to acute suppurative periostitis of three months' duration. After removal of the bone it was replaced in a few weeks by an hypertrophic new shaft. When seen four years later, but for the skin cicatrix, one could not have told the limb had been operated on.

The following case shows the rapidity of repair:

CASE IV.—A girl, aged six years, had several sinuses on the skin, and considerable suppuration. A portion of bone, four and a quarter

¹ There have been cases of failure. See Jones's *Diseases of Bones*, p. 85; also *British Medical Journal*, 1 p. 793, 1885; and one case in Kashmir, but the last was after secondary resection.

inches long, was resected on November 17th. The discharge, after the second day, did not exceed half a drachm. By the fourteenth day there was evident firmness, except at the central sinus. When the discharge quite ceased at this point the granulations rapidly became osseous. I used to observe the ossification by pushing a needle through the granulation tissue. Splints were worn to check deformity, but, before the month was out, she could walk unaided.

On December 17th she was photographed and went home. The cicatrix was not yet pigmented.

About the same time the tibia of a lad was partially resected. Three weeks later, owing to suppurative synovitis of the knee-joint, secondary to disease of the head of the fibula, I amputated the limb. Examination of the tibia showed that the site of the resection was filled by a firm gelatinous material exactly corresponding in size and shape to the bone removed. From the epiphysis and the cut extremity of the shaft, ossification was rapidly penetrating this material. A careful microscopic examination of this was made, and also an oil painting of it while in the fresh state.

The size and moulding of the new bone are not, as perhaps might be expected, dependent on the size of the cavity left to be filled by osteoplastic granulations.

In one case I left open the wound. In this, owing to overgrowth of new material, it was difficult to obtain cicatrization of the skin. In most of the cases the soft walls of the wound contracted to the size of the large sized drainage tube left in the cavity. In yet another case no tube was used, and there was no space left at all. But in all these cases steadily and surely the gap in the shaft was filled by a well-defined hard substance; which, in most cases, enlarged to something above normal size.¹

It seems as if where the growth of the simple neoplasm is deficient, or where its individuality is obtrusively developed, the organism controls its working and models them to its own patterns. As where a capillary circulation enlarges to carry an anastomotic circulation, or the bulky cicatrix with its complex adhesions becomes pliant. Similarly the slender cartilage-like (not cartilaginous) shaft enlarges; to compensate for its early pliability it hypertrophies, but, finally, both in size and shape, becomes more and more closely approximated to the design of the original bone.²

It must be remembered that the very cases in which acute necrosis occurs are those in which there is abundant tissue activity.

4. The case of what I may call secondary resection—that is, resection

¹ If the wound be left to close by granulation, hypertrophy is common. I have seen three or more cases.

² A case is reported by William T. Smith, *Lancet*, vol. i. p. 753, 1884, of ulceration of the cicatrix; the patient desiring amputation.

of healthy bone, in some cases of the new bone, as well as of diseased bone, is on a different footing. It is done on a different class of subjects, and not of necessity; and before deciding on it, the age of the patient and the condition of the periosteum have to be taken into account, as well as the local and general conditions.

For example, in a case of chronic endostitis in which necrotic lamellæ are buried in the sclerotic layers of a thickened shaft, what can be done? If the subject is under twelve or fourteen years of age, subperiosteal resection is by far the best and quickest method of cure.

There is a distinct possibility of overstepping the mark and failing to obtain sufficient new bony formation to replace the shaft in many cases of endostitis, for the periosteum may be inactive and the age of the patient unfavorable. I have seen a case, in the practice of another surgeon, in which the tibia of a lad of sixteen was removed for spicular necrosis, and was replaced only by a thick fibrous band. In such a case bone-grafting, as recommended by M. Poncet¹ in primary resection, might be useful; but in the cases suitable for primary necrosis it is quite unnecessary; and is harmful in preventing primary union of the skin.⁶

5. But there is the former objection to consider. There can be no doubt that in operating early in other than cases of total necrosis, it is no simple matter to estimate the extent of bone that will be sequestered. The mere presence of necrosis if superficial is easily ascertained, but without inspection and, it may be, gouging of the surface² the limits cannot be defined. In the majority of cases the surgeon may well be content to wait for exfoliation.³ But where the disease is extensive and is dangerous to the patient by excessive or prolonged suppuration, or by implication of a joint, the intervention of the surgeon will certainly be beneficial.⁴ He should then attempt not merely to drain, but to remove the whole disease. In an accessible bone like the tibia this is not difficult. If superficial, the disease is rarely circumferential, but extends in parallel layers. Often there are necrosed lamellæ imbedded in the thickness of the bone; or sometimes a mere shell of necrosis in the medullary canal. In many such cases I have removed the whole circumference of the shaft for a length of from two to six inches; in others, the removal has been with the chisel in such a way as to leave a narrow strip of the shaft to serve as a splint. It is more usual to treat such cases by gouging, leaving a complete shell of bone. Where this is much expanded it entails considerable disadvantages, leaving a large cavity

¹ Poncet, *La semaine Médicale*, December, 1886, recommends primary bone-grafting after resection.

² Better than trephining, as one may thus chisel away the whole disease, or leave a strip of bone as a splint; *vide* Heath, *Lancet*, vol. i. p. 573, 1877.

³ Social conditions have to be considered. In some countries to delay operating, is to lose the opportunity of doing so at all.

⁴ Macnamara: Appendix. Spence, *Lancet*, vol. i. p. 287, 1876.

with rigid walls, to heal which, by granulation, is a very slow process. If the new bone be removed on one side, the cases heal much quicker.

I think secondary resection is seldom, if ever, indicated in the femur and humerus, although in a lad with a huge expanded femur, in which sequestra and shell seemed inextricably mixed up, I performed it last year with a successful result; removing five inches of the bone. It was replaced in a few weeks by a still more massive shaft.

To the other long bones it is certainly applicable; and where performed a cure may be confidently looked for in as many weeks as the case might otherwise require months. Resection should, of course, never be performed where a *simple* sequestrotomy would suffice; and in many cases patience is rewarded by the exfoliation of an easily removed sequestrum.

6. After resection of the whole thickness of a long bone, care has to be exercised to prevent shortening, distortion of the limb by muscular action, or by overgrowth or displacement of the second bone, as the fibula, etc.

My practice is to suture the skin closely and leave in a large drainage tube until the periosteum is beginning to thicken and form granulations. The limb is kept on a splint and with extension apparatus. If after removal of the tube reaction is insufficient, a stout wire may be inserted and left in the whole length of the wound. I have not had occasion to use bone or periosteal grafts in any resection case. In spite of the care involved, and of apparently severe operations, there are few more satisfactory cases to the surgeon than these.

A patient is brought in a state of hectic from suppuration, and it is doubtful whether he will survive expectant methods of treatment; amputation is thought of, but excision of the diseased shaft instead of the limb is followed by a fall of temperature, cessation of suppuration and within a few days the appetite improves, and before long a renovated bone sets its seal on the convalescence. The rapidity of the improvement needs to be seen to be believed; and a series of cases needs to be watched before one realizes what freedom from complications and certainty of success the operation gives if the age of the patient be not too great.

In conclusion, the importance and success of thorough bone drainage, as a means of preventing necrosis, is only now being generally recognized by the profession; the day will surely come when it will also recognize that in subperiosteal resection it possesses a thorough and rapid means of curing many cases not amenable to drainage. Bone-surgery offers no exception to the maxim that "Nature is a good servant, but a bad mistress."

APPENDIX.

TABLE OF MAJOR OPERATIONS ON THE LONG BONES.

Kashmir Mission Hospital, January 1, 1882, to December 31, 1886.

Operation.	Femur.	Tibla.	Fibula.	Humerus.	Radi s.	Ulna.
Subperiosteal resection, primary or secondary	2	10	4	2	2	3
Chiselling or gouging	10	21	1	3	1	...
Sequestrotomy	20	21	...	3	2	1
Bone drainage by osteotomy, etc. . . . .	...	12	...	...	...	...
Total	32	64	5	8	5	4

This list does not include the very numerous cases of periosteotomy, opening abscesses, etc. Of the whole, only two cases (mentioned in the text) were fatal. None were amputated. All regained useful limbs.

CASE OF BILATERAL OPHTHALMOPLÉGIA EXTERNA AND INTERNA ASSOCIATED WITH TABES DORSALIS, BULBAR PARALYSIS, AND LOSS OF VISION AND HEARING.

WITH SOME OBSERVATIONS UPON THE PATHOGENY AND ETIOLOGY OF
BILATERAL OPHTHALMOPLÉGIA EXTERNA.¹

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ALTHOUGH von Gräfe, in 1856,² described "progressive ophthalmoplegia," it was not until 1879 that Jonathan Hutchinson aroused the attention of English physicians to that affection under the title "Ophthalmoplegia Externa,"³ or paralysis of the external muscles of the eyeball. In the preceding year he had employed the term "ophthalmoplegia interna"⁴ to indicate loss of power of the internal musculature of the eye, the iris and ciliary muscle. The affection described by the eminent English surgeon, however, was not the very common one in which the external muscles supplied by the third or the sixth nerve of one eye are paralyzed, partial oculo-motor paralysis, but that in which there is bilateral or symmetrical immobility of both eyes with ptosis.

Now, clinically, it is very important to distinguish between unilateral

¹ A paper read at the meeting of the Canada Medical Association, 1888.

² Arch. f. Ophth., Bd. 11, p. 299, 1856.

³ Med.-Chirurg. Trans., lxi. p. 308.

⁴ Ibid., lxi. p. 215.

ophthalmoplegia and the symmetrical bilateral form as the causes or conditions of occurrence are not the same in both. The bilateral, if involving all the external muscles of the eyes, but exempting the internal, very frequently, but not always, indicates disease of the nuclei situated in the floor of the fourth ventricle and of the aqueduct of Sylvius from which the oculo-motor nerves arise. It is often associated with similar degeneration in the nuclear origins of other cerebral or spinal nerves, as in bulbar paralysis and progressive muscular atrophy, or in the posterior columns of the cord as in *tabes dorsalis*.

Through the kindness of several colleagues, I had occasion to see the following case in consultation September 9, 1884:

Patient, an educated man fifty-four years of age, was of studious and very temperate habits, and free from evidences of syphilis, the possibility of which disease he positively denied. He married at thirty-three, and was the father of sixteen children; the youngest eight months old. About the beginning of August, 1883, suffered from severe headache, which he regarded as migraine, having been much afflicted with that neurosis in his youth; at the same time he became irascible. Toward the end of the month strabismus, diplopia, and slight ptosis on the left side supervened, but these gradually disappeared in about six weeks. Some five months later, lateral deviation of the right eye with diplopia set in, and in about two months was followed by ptosis, which like the other symptoms developed gradually, but unlike them has proved permanent.

In January, 1884, vision began to fail, and very soon reading produced ocular fatigue and frontal headache. In March articulation gradually grew difficult and slow—he had been a rapid speaker. He experienced no difficulty in selecting words to convey ideas, no failure of memory or intelligence. In April power of mastication became enfeebled, so that finally the lower jaw dropped from the upper and he could not raise it without the aid of his fingers. Deglutition likewise suffered; solids were occasionally arrested and ejected; fluids, including the saliva, trickled from the open mouth. In March his appetite left him, he became very weak and despondent, steadily lost flesh, and took to his bed from general debility. At this time his sexual power declined rapidly. In July deafness set in gradually and at first intermittingly. In the early part of August vision of the right eye failed rapidly. Of late he has been able to elevate the right eyelid a little and has regained somewhat masticatory power. Since March he has had several syncopal attacks, in which, although he does not lose consciousness, he grows very faint, vision fails, and his pulse becomes scarcely perceptible.

Present state.—Pale and much emaciated; surface dry and polished looking, voice feeble. Relates his own history, but so indistinct and defective is his articulation that I cannot understand many of his words. Marked ptosis on right side; can slowly raise the lid sufficiently to expose lower half of pupil; slight ptosis on left side; eyeballs fixed, no lateral or vertical movements; axes normal in direction; no strabismus; right pupil moderately large; left of medium size; both unaffected by light, and in both power of accommodation lost; complete blindness of right eye; reads with difficulty medium print with left eye—but two or three words fatigue him; eyes cannot follow an object passed

before them; has occasional darting transitory pains in the eyeballs, unaccompanied by luminous phenomena.

Right side of face smoother than left and angle of mouth drawn slightly to the left; cannot whistle; can contract orbicularis palpebrarum well, but the vertical folds are not as pronounced in the right upper lid as in the left. Lower jaw at rest is pendant; when speaking he closes it; asked to close the jaws, he does so by lifting his chin with two fingers; says that he has more power of mastication than he had, yet he cannot bite my finger placed between his teeth; little if any lateral movements of inferior maxilla; the masseter and temporal muscles on both sides are wasted, and can hardly be felt to contract during mastication; tongue when protruded deviates to the right, and its right half appears to be slightly atrophied.

No loss of power beyond general weakness in arms and hands; grasp of dynamometer by right hand 82, by left 78; in the horizontal posture can raise either leg when extended in spite of considerable pressure applied in front of ankle.

Tick of watch not heard when watch is applied either to ear or mastoid region; at speaking distance a moderately loud voice is heard; smell and taste unimpaired; function of bladder fairly performed; habitual constipation; appetite and digestive power now good; lives chiefly upon milk and soup; pulse 78, not strong; systolic basic murmur over heart.

Sept. 13. Reexamined patient and confirmed the above facts, and learned some additional ones. Tactile and thermal sensibility lost over right frontal region, especially over supra-orbital region, less impaired over the infra-orbital area; not impaired over mental area; sensation on left side of face normal except in the temporal and supra-orbital regions; cornea of either eye insensitive to touch, and no reflex contraction of lid produced thereby; sensibility of both sides of tongue and of soft palate normal; no numbness in soles of feet; absence of patellar-tendon reflex on either side; prompt contraction of vastus internus under percussion of finger; walks readily without any ataxia with eyes shut, but totters from debility; has had for some time sense of stiffness of right cheek, and the finger introduced into mouth finds that the right cheek is forcibly applied to the teeth; at my request an oculist examined the retina, and on the 20th he reported the existence of that form of optic atrophy in either eye that occurs in locomotor ataxia, and loss of vision.

Another opportunity of seeing the patient was not afforded me, and he died two months later. There was no autopsy.

Here, then, we have a definite, yet progressive, invasion in the nervous system in a previously healthy and temperate man, free from syphilis, the steps, so to speak, of which were: headache, irascibility, diplopia, strabismus, and slight ptosis on the left side, which disappeared gradually. Five months later a gradual but permanent establishment of the same symptoms on the right side. A few months later gradual impairment of articulation, mastication, and deglutition, and about the same time the loss of sexual power. Four months later, intermitting and then continuous progressive bilateral impairment of hearing; a month later,

rapid failure of vision in right eye, and soon thereafter a tendency to syncopal seizures.

The order of development of the following additional symptoms present when he first came under my observation cannot be stated, as they had not been investigated: loss of pupil reflexes and of accommodation; complete immobility of both eyes, and occasional transitory darting pains in them; loss of the patellar-tendon reflex; insensitiveness of both corneæ, with absence of corneal reflex; loss or impairment of tactile and thermal sensibility in same branches of both fifth nerves—paresis of associated muscles—labial (supplied by the facial nerve) and lingual (supplied by the hypoglossal).

Resolving the symptoms present in this case into the several groupings which they appear to form, we have chronic progressive ophthalmoplegia externa and interna, chronic labio-glossal paralysis, and tabes dorsalis, combined with bilateral motor paralysis of the fifth nerve; loss of two of the special senses, vision and audition; and impairment of common sensation in some of the branches of the sensory portion of the fifth nerve on both sides.

The direct evidence of the existence of tabes dorsalis is the absence of the patellar-tendon reflex and the loss of sexual power without paralysis of the lower extremities; and the indirect, is the association with the above of double optic atrophy and amaurosis; early disturbance of the external and internal ocular muscles.

It is to be regretted that an examination of the larynx was not made, nor the degree of mobility of the soft palate recorded; but the coexistence of the following symptoms: great impairment of articulation and deglutition, inability to whistle, paralysis of the tongue, with slight wasting of one side of it, points to bulbar paralysis. Had the patient lived longer, paralysis, I doubt not, and wasting of both sides of the tongue would have been more marked.

It is not necessary to go over the evidence of the presence of progressive bilateral ophthalmoplegia. I have already alluded to the frequent association of chronic symmetrical bilateral ophthalmoplegia with other chronic affections of the nervous system, especially tabes dorsalis, and bulbar paralysis, and its occasional coexistence with progressive muscular atrophy and with "general paresis."

PATHOGENY.—As these chronic associates of progressive symmetrical ophthalmoplegia present as their essential lesion a degeneration, consisting of an atrophy of the nerve elements and hypertrophy of the connective tissue of the affected portion of the columns, horns, bulb, or cortex, so in a few instances of progressive ophthalmoplegia that have been examined carefully¹ after death, an identical degeneration of the

¹ Med.-Chir. Trans., lxii. p. 316; Gower's Dis. Nerv. System, ii. p. 185.

elements of the central nuclei, from which the oculo-motor nerves arise, has been found, hence the name recently applied to these cases, "Nuclear Paralysis."

Chronic progressive ophthalmoplegia belongs, as a very general rule, to the "system diseases" of the cerebro-spinal system, depending, as it does, upon the morbid conditions of structures which have a common function, the regulation of the movements of the external and internal muscles of the eyes. Participation in function and secondary degeneration of tracts or centres connected with the primarily diseased area are clues to the pathogeny of bilateral ophthalmoplegia; but they do not explain the coexistence of bulbar paralysis or of tabes dorsalis, etc., sometimes present with it. Why, in such a case, does a distinct and different "system disease," a labio-glossal paralysis, or a posterior spinal sclerosis, or, as in our case, *both of these*, become associated with bilateral ophthalmoplegia externa? When the close proximity of the motor and even of the sensory nuclei of the cerebral nerves is recalled,¹ simple *extension* of disease by contiguity will doubtless be a part of the answer to this question.

Disease of the bloodvessels supplying the centres, such as endo- and peri-arteritis and senile atheroma, may also partly account for degeneration and other lesions of different centres or tracts which receive their blood supply from the same vessels.² Senile atheroma especially is apt to be diffused over the general arterial system, and the consequent atrophy or sclerosis may then invade indifferently and at the same time or successively, functionally related "systems" and structures of distinct and different functions.

Syphilis would seem to exercise some not well understood influence in predisposing to, if not inviting, degenerative processes in the oculo-motor nuclei as well as in the posterior spinal column, and this may account for the coexistence of ophthalmoplegia externa and locomotor ataxia, or of ophthalmoplegia and general paralysis of the insane. Syphilis is especially prone to produce endo- and peri-arteritis, and this is doubtless one way in which it imitates a diffused sclerosis or degeneration in the brain or cord. Finally, some congenital defect, whether an inherent want of resisting power to morbid influences, or an imperfect development of certain tracts, may account for the facility with which degeneration or other morbid process affects different portions of the cord or brain.³

As regards the *etiology* of bilateral ophthalmoplegia, the *acute* form has been met with in *apoplexy*, the blood occupying the region of the

¹ Exhibited diagrams of nuclear origin of cerebral nerves.

² See Adamkiewitz: Trans. International Med. Cong., London, pp. 1-3, 1881.

³ Vide Ormerod, Brain, 1884; Bury, *Ib.*, 1886; Smith, Boston Med. and Surg. Journal, 1885.

oculo-motor nuclei¹ or pressing upon the corpora quadrigemina and floor of the third ventricle, in a case of basic tuberculous meningitis,² as a rare sequence of diphtheria³ and of typhus fever,⁴ in a case of sulphuric acid poisoning, and in three of chronic alcoholism.⁵

When alcoholism or diphtheria induces ophthalmoplegia, it is probably sometimes through a *peripheral neuritis*. In Suckling's⁶ case, due to alcohol, there were symptoms of peripheral neuritis in the lower extremities associated with the ophthalmoplegia. In the diphtheritic form it is probably rather a simple degeneration of the nerve fibre than a real neuritis, the interstitial tissue of the nerves very seldom exhibiting the proofs of inflammation except in the nerves of the palate.⁷ The degeneration may affect the *periphery* of the nerves in their *whole extent*, including their anterior roots.

Diphtheritic ophthalmoplegia is probably sometimes of *nuclear* origin; just as diphtheritic paralysis of the spinal nerves is, in severe cases, sometimes associated with alteration of their ganglion cells in the cord. This view is favored by the fact that capillary hemorrhages have been found in the nerve centres and nerves in diphtheria. Professor W. M. Thomson,⁸ however, has quite lately objected to the doctrine that diphtheritic paralysis depends upon lesions of the nervous centres, and has advocated its peripheral origin. The weight of evidence, in my opinion, supports the statement, that while diphtheritic paralysis is most frequently caused by peripheral neuritis, it is occasionally an effect of lesion of the nerve centres.

Finally, acute ophthalmoplegia has been observed in connection with bulbar paralysis and with facial palsy combined with paraplegia.

Chronic bilateral ophthalmoplegia, *per se*, is most frequently found in syphilis⁹ affecting the oculo-motor nerves from their points of emergence from the base of the brain to the cavernous sinus, or in the walls of that sinus; or possibly affecting their nuclei directly or probably indirectly through disease of the vessels which supply these nuclei. It is also frequently observed in association with tabes dorsalis and occasionally in combination with progressive muscular atrophy, chronic bulbar paralysis and "general paresis;" and is then mostly due to nuclear degeneration, these associated diseases severally depending upon degeneration of the nerve fibres and cells of the cord or the brain.

¹ Sturgo: Brit. Med. Journal, i. p. 851, 1881; Thomas: *Ib.*, i. p. 763, 1882.

² Mules: Brit. Med. Journal, xi. p. 127, 1887.

³ Gowers, *Lib. cit.*, cites two cases: Ulthoff *Neur. Centralbt.*, 1885, and Mendel, *Ib.*, *corœenne Bull. de l'Soc. Franc. d'Oph.*

⁴ Corœenne, *Ib.*

⁵ Gowers, *Lib. cit.*, xi. p. 182, from *Gehirn Krankheiten*, xi. p. 233.

⁶ Suckling, Brit. Med. Journal, i. p. 464, 1888

⁷ The *Med. News*, Philadelphia, June 9, 1888.

⁸ Hutchinson: *Med.-Chir. Trans.*, lxii.; Seguin; *Journ. Nervous and Mental Dis.*, 1888, 317, and many others.

⁷ Gowers, *Lib. cit.*, ii. p. 838

Thrombosis and inflammation of the cavernous sinuses are occasional causes of more or less complete progressive bilateral ophthalmoplegia.¹ It is then usually at first unilateral, but as the thrombosis is very prone to extend from one cavernous canal to the other,² the paralysis often becomes bilateral, and sometimes the muscles of the eye primarily affected regain their power. In some instances, internal ophthalmoplegia is joined to the external form (Robinson and Hutchinson's case). This implication first of one eye, then of the other, was regarded by Dr. Coupland as pathognomonic of ophthalmoplegia caused by thrombosis of the cavernous sinuses, but in the case which forms the subject of this paper there were no grounds for suspecting disease of the sinus, yet the ophthalmoplegia was unilateral for five months before it invaded the other side.

Tubercle at the top of the pons near the aqueduct of Sylvius was supposed to have been the causative lesion in Berry and Bramwell's case observed in a child two and a half years old.³ The patient recovered, hence no opportunity was afforded of testing the accuracy of the diagnosis. In a case presenting almost the same clinical features as the last, Kojewnikoff⁴ found capillary hemorrhage with softening of the gray matter limited to the floor of the fourth ventricle, the confines of the nucleus of the third nerve and aqueduct of Sylvius, extending symmetrically upon the two sides. Softening from embolism or thrombosis of the vessels of the floor of the fourth and third ventricles may be a rare cause of the disease.⁵ Cold has been the only apparent cause in a few cases, and so have blows on the head, probably through basilar meningitis, or hemorrhage, or basilar periostitis being thereby reproduced.

Cases are published in which bilateral ophthalmoplegia externa has been a congenital and inherited defect. In some of these the ocular muscles and not their nerves seemed to be the source of the affection, for in a few instances the muscles have been found absent, in others they have been shorter and their sclerotic insertions placed more backward than what is normal. W. Lawford met with three instances of this inherited form in a family of seven children.⁶

In some cases observed in early life and apparently due to muscular defects, the primary disease may have been in the nerve centres and have been followed by atrophy or arrested development of the ocular muscles.

Well-marked cases of bilateral ophthalmoplegia externa uncompli-

¹ Coupland: *Trans. Ophthal. Soc. of United Kingdom*, 1887, vii. 228; Robinson and Hutchinson, *Jr*, *Ib.*, 250, with plate.

² Thirteen times in twenty-two cases collected by Coupland.

³ *Edinburgh Med. Journ.*, 1887.

⁴ *Annals of the Universal Med. Sciences*, 1888, iii. 143, quoted from *Prog. Médicale*.

⁵ Kohler and Peck, *Zeitschr. f. Heilk.*, Prag., tli. 1880-81.

⁶ *Brit. Med. Journ.*, ii., 1887.

cated by *other* evidences of disease of the nervous system are recorded¹ in which *no cause* could be assigned. In one of these our young Canadian representative in the metropolis, W. Lawford, "thought the nuclei involved were those controlling the bilateral coördinated movements excited through the third, fourth, and sixth nerves, rather than the nuclei of origin of those nerves, for the reason that the action of the iris and ciliary muscles remained intact in each eye." But it is now admitted² that the nuclei which supply the internal muscles of the eye *lie in front* of those which supply the external muscles, and they are not supplied by the same vessels, so that the nuclei of the external ocular muscles may suffer and the nuclei of the internal escape, and *vice versa*.

It is perhaps possible that a *tumor* compressing the floor of the fourth ventricle and Sylvian aqueduct may cause bilateral ophthalmoplegia externa, but it must be an exceedingly rare occurrence and there would in all probability coexist other evidences of cerebral tumor, the most reliable perhaps of which would be double optic atrophy—not referable to tabes.

In addition to these causes which are severally productive of bilateral external ophthalmoplegia through a *gross lesion* of the oculo-motor centres or nerves, recent clinical experience has brought to light cases of the disease apparently of *functional* origin, and belonging to the neuroses, as idiopathic epilepsy and hysteria, etc., do.

A very interesting case of ophthalmoplegia externa associated with Graves's disease was published by Dr. Francis Warner³ in 1882, and its sequel is related by Dr. Bristowe⁴ in an able paper contributed in 1885, under the title "Cases of Ophthalmoplegia, complicated with various other Affections of the Nervous System." In addition to Graves's disease, this patient became the subject of bilateral ophthalmoplegia externa, gastric crises, complete right hemianæsthesia, great nervousness, constantly recurring hemorrhages from the ears and right nostril, and subsequently epileptic fits, persistent right hemiplegia with rigidity, and an almost constant temperature ranging from 101° to 105°. She died of bronchitis. A careful microscopical examination failed to detect "even a trace of disease" in the brain, cord, or intra-cranial tissues.

Bristowe's second case was almost a counterpart of his first, but the right-sided hemianæsthesia was not complete, the cerebral hemorrhage and Graves's disease were absent, and a left-sided chorea formed an

¹ J. B. Lawford : Trans. Opth. Soc. of United Kingdom, vii. 260, and Brit. Med. Journ., 1887, ii. p. 127; Boivior : Trans. Opth. Soc., vii. p. 281, and Brit. Med. Journ., 1887, i. p. 622; Hutchinson, *Ib.*, 1888, i. p. 137; Birdsall : Journal Nervous and Mental Dis., 1887, p. 66.

² Hensen and Völckers, Kohler and Pick, Jairhand. Forster, Graves.

³ Med.-Chir. Trans., vol. 66, pp. 107, 112.

⁴ Brain, Oct. 1885, pp. 313, 344; *Ib.*, Jan. 1887, pp. 544, 546.

episode of the case: this girl gradually recovered from her ophthalmoplegia, right hemiplegia, epileptic fits, etc.

Dr. Gilbert Ballet¹ last May contributed a personal observation of a case of exophthalmic goitre associated with paralysis of the ocular and facial muscles, a general anæsthesia, *i. e.*, loss of all special and common sensation, the loss being most profound on the left half of the body—bilateral ophthalmoplegia externa—diabetes insipidus, hysteria, and slight impairment of tongue movements. He *quotes* also a case² in which external ophthalmoplegia was combined with Graves's disease, paralysis of the facial, the motor branch of the fifth, and the hypoglossal; no hysterical symptoms coexisted.

Notwithstanding Dr. Bristowe's opposite opinion, I cannot help coinciding with Dr. Ballet in the view that the two patients of the former were the subjects of that functional disturbance we call hysteria, and that the bilateral paralysis of the ocular muscles was of that nature. The association of the ophthalmoplegia with Graves's disease in two of these cases is not opposed to this view, for the latter disease itself belongs to the neuroses or functional affections of the nervous system, and is not infrequently coexistent with hysteria. The important fact is established then, that bilateral ophthalmoplegia externa, although usually an evidence of *organic* disease of the oculo-motor nuclei or nerves, is sometimes a *functional* affection and then is a more hopeful and sometimes a curable affection. The functional variety is of either nuclear origin or more probably depends upon disturbance of oculo-motor centres higher up in the cerebral organism, those perhaps which have to do with volitional motor centres, in the cortex angular gyrus.

It is interesting, in this connection, to note that in these four cases of functional ophthalmoplegia externa, while the external or *voluntary* muscles of the eyes were paralyzed, the internal or *avolitional* muscles were not, the ciliary and the iris muscles continued to perform their reflex and coördinate movements. This is perhaps one very valuable diagnostic difference between functional *bilateral ophthalmoplegia externa* and the more frequent variety due to structural disease.

Amongst many points of interest which this example of bilateral ophthalmoplegia presents, there is one only that I will venture to allude to, as this paper is already too long, *viz.*, the coincidence of the lesion of the motor and sensory roots of the trigeminus which Dr. Seguin,³ who has also reported an instance, says, on the authority of Dr. Starr, "is almost, if not quite, without precedent."

In conclusion, it may be said that the facts we have mentioned in connection with the etiology of bilateral ophthalmoplegia externa seem

¹ *Revue de Méd.*, May, 1888, pp. 338, 344.

² *Ibid.*, p. 363 from *Arch. für Psychiatrie*, B. xvii. Heft. 2, Jandrássik

³ *Jl. Nervous and Mental Disease*, May, 1888, p. 317.

to contradict the statement recently made that such paralysis is always due to central or nuclear disease.¹ We have just seen that it may be also of neural or of peripheral origin, as when due to thrombosis and inflammation of the cavernous tissues, to syphilis, diphtheria, and chronic alcoholism, which may produce either inflammation or degeneration of the oculo-motor nerves themselves. A blow on the head must also be recognized as a possible peripheral cause. Further, the affection may be a purely functional one of hysterical nature and the prognosis be then favorable.

Again, it follows from the facts adduced that bilateral external ophthalmoplegia is frequently at first unilateral and not symmetrical, and it may be impossible to say with certainty whether a unilateral case will become bilateral or not.

Owing to the close proximity of those nuclei of the third pair which preside over the movements of the ciliary muscle and the iris, to those nuclei of the same nerve which regulate the movements of the external muscles of the eyeballs, it frequently happens that bilateral external ophthalmoplegia coexists with bilateral internal ophthalmoplegia; and the circumstance that these nuclei are distinct with functions proper to each accounts for the existence of ophthalmoplegia interna or externa independently each of the other. As a final remark, those interested in the subject of the diagnosis of the several varieties of palsy of the ocular muscles will find a valuable paper by Dr. Allen Starr in the last May number of the *Journal of Nervous and Mental Diseases*. He has there adduced some striking reasons for a new arrangement of the position of the nuclei of the third nerve on the floor of the fourth ventricle differing from both Hensen and Vöelcher's and from Kohler and Pick's.

SUPERNUMERARY MAMMÆ AND NIPPLES IN MAN, MONKEYS, COWS, ETC.,

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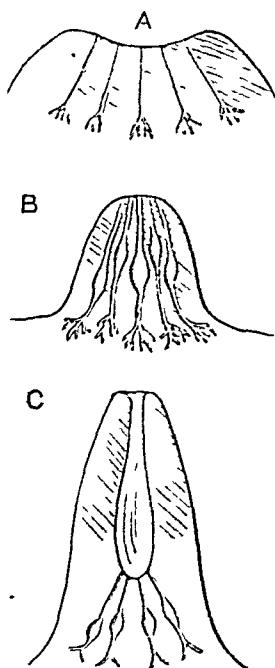
MUCH that is fanciful and speculative is mixed with the subject of atavism, and the widespread acceptance of the principles of evolution has had the effect of rendering us less critical in the examination of suspected cases. In this short paper I propose to consider briefly the main facts connected with supernumerary nipples and mammæ, for the purpose of showing the care necessary for the proper discrimination of

¹ Dr. M. A. Starr: *Journal Nervous and Mental Dis.*, May, 1888, p. 316; and *Trans. Ophthal. Soc. United Kingdom*, vii.

atavistic phenomena from counterfeit manifestations; this is not always an easy task, but I trust the facts considered in this communication will indicate clearly the need of such distinction.

Up to the present time supernumerary mammæ or nipples in various stages of development have been reported in the following situations of the human body: the anterior wall of the thorax and abdomen, axilla, arm, shoulder, over the parotid, labium major, and in ovarian dermoids. If we accept unreservedly, that supernumerary mammæ are always atavistic, we force ourselves into the absurd position of imagining ancestors better supplied with milk-glands than even Diana of Ephesus; or if we protect our opinion by stating it in this way: when a mamma occurs in an abnormal situation in man, but corresponds to the normal situation of the mamma in some lower animal of our class, it is then atavistic, we save ourselves much trouble. In many cases the guess may be correct, but it is quite as likely to be erroneous, and as such loose

FIG. 1.



Three forms of milk glands A. The ducts open on a hairless patch of skin B. The ducts traverse the nipple. C. The ducts open at the base of the teat, the sides of which are elongated to form a conduit for the secretion

methods of determining the nature of abnormal organs will in the long run lead to much confusion, it is necessary to raise a timely caution, and as this matter may be well illustrated by supernumerary mammæ we will now proceed to consider them.

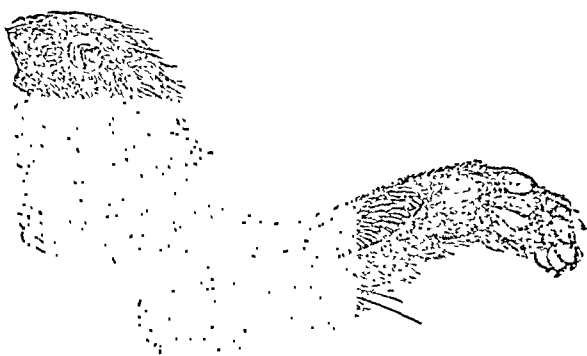
At the outset we are faced by the question, What is a mamma?

A mamma is a collection of modified sebaceous glands secreting milk and having close relation to the function of reproduction. As a rule, such glands are furnished with a cutaneous papilla, the nipple or teat, which is either traversed by the ducts of the glands, as in Fig. 1, B, or forms a conduit for the milk as in C, thereby affording convenient means whereby the young are enabled readily to suck the secretion. Mammæ without ducts normally occur only in the menohemata. Milk-glands are the distinguishing feature of the class of vertebrata known as mammalia, and are unknown beyond the limits of this class.

Mammary glands are, as a rule, regular and symmetrically arranged along the ventral aspect of the trunk in two rows. When numerous they extend along the thorax and abdomen into the inguinal region. The teats usually correspond to the maximum number of young at a birth, but to this rule there are many exceptions. The greatest number known is fourteen pair. When the number of functional glands is reduced to two, traces of the suppressed mammæ occur as supernumerary or accessory nipples with or without rudimentary glands.

The reduction in number may take place in the thoracic region, leaving the inguinal set functional, as in the cow, mare, goat, and ruminants in general. The inguinal glands may abort, leaving the thoracic set to carry on the work as in man, dugong, manatee, elephants, monkeys, and sloth. Normal mammæ are rarely seen in situations other than the ventral aspect of the trunk, but in the remarkable form *Hapalemur griseus*, Beddard¹ found them on the arm (Fig. 2). In many didelphia the teats are arranged concentrically, and when the number is uneven

FIG. 2.



Hapalemur griseus with its brachial mamma.

the odd nipple may be median in position, as in some opossums. The lemurs present instructive variations. *Lemur catta*, like most of that family and quadrumana generally, possesses a pectoral pair of glands;

¹ Proc. Zool. Soc., 1884.

Galago has two pair of pectoral teats. The Aye-Aye (*Cheiromys*) possesses an inguinal pair, whilst that remarkable form *Tarsius spectrum* is said to be furnished with an inguinal and a pectoral pair of glands.

Though nipples are present in equal number in the male as in the female, they are rudimentary in character; in rare cases, however, the male gland has been known to furnish milk and in useful quantity. Such cases have been reported in men, male goats, and castrated sheep.

When the mammæ or nipples are increased beyond the number normal for a given mammal, male or female, they are said to be supernumerary or accessory, and may occur in three forms:

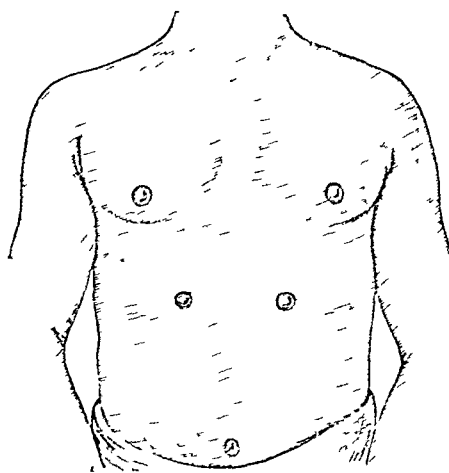
1. Mammæ with nipples.
2. Nipples without mammæ.
3. Mammæ without nipples.

Such mammæ may be due to *atavism*, or arise by *dichotomy* of the normal gland germ, or may occur as a "sport" or spontaneous variation.

It is now our business to study examples of supernumerary mammæ and discuss to which class they belong.

Supernumerary nipples and mammæ are more common in men than in women; indeed, they occur so frequently that Dr. Mitchell Bruce¹ in

FIG. 3

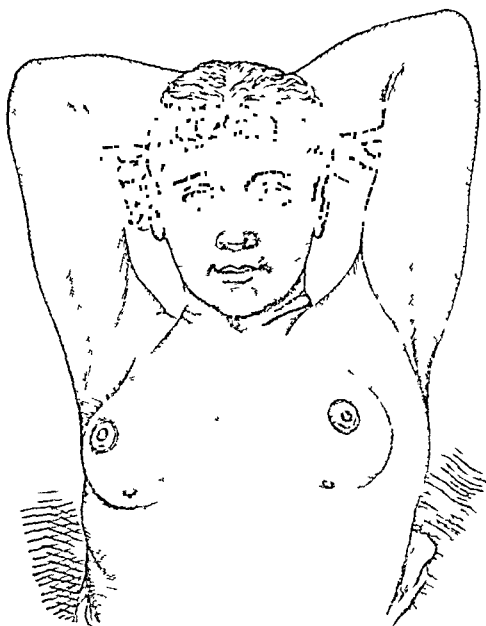


Two supernumerary nipples in the male. (After LICHTENSTERN.)

three years saw sixty-five examples. Among 207 men examined consecutively, 9.11 per cent. presented an extra nipple, and of 104 women, 4.8 per cent. The extreme frequency of supernumerary nipples in man is now generally admitted.

In most instances the accessory nipple is single, is far oftener seen on the left than on the right side, and is in the majority of cases situated on the thoracic wall. In a few instances it is seen on the abdomen, but is quite exceptional. Occasionally they may be symmetrical (Fig. 3). In such cases they strictly follow the line of the superior and deep epigastric arteries, a circumstance which will demand consideration. It has already been mentioned that a comprehensive survey of the disposition of the teats in mammals generally, indicates that primitively they were arranged in two rows extending along the ventral aspect of the trunk in both sexes. In situation they correspond to the course of the superior and deep epigastric arteries. This extraordinary anastomosis effecting a communication between the subclavian and iliac system of arteries is a vascular arrangement peculiar to mammals, and has a close, if not direct, relation with the mammary glands.¹ From this it would follow, from what we know of atavistic phenomena in general, that some of these suppressed mammæ, or nipples, should occasionally reappear in those mammals which now normally possess only a fraction of the number which existed in their ancestors, or in closely allied forms. As far as I

FIG 4.



Supernumerary nipples in a woman (After LICHTENSTERN)

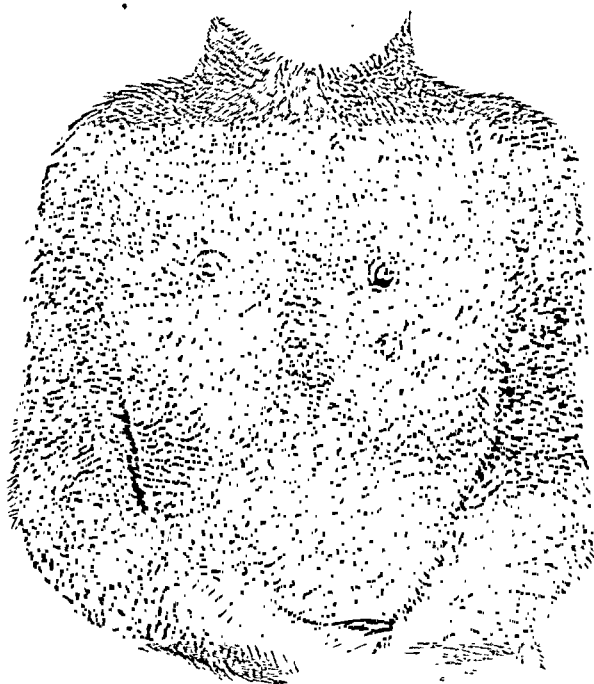
can see, only those supernumerary mammæ and nipples which follow the line of these arteries can be looked upon as reversionary; even in this situation they cannot always be regarded in this light, as I shall presently show.

¹ See *Lancet*, February, 1887

We now know that accessory nipples and rudimentary mammae are extremely common in man, and it occurred to me that theoretically they should be found in monkeys if carefully sought. To this end I systematically examined all the monkeys coming under my notice, and in a very short space of time secured two well-marked specimens.

My first specimen was a female, a Macaque monkey, *Macacus sinicus*. On the left side, and an inch below the normal mamma, an accessory and well-developed nipple was seen, associated with glandular tissue (Fig. 5). My second specimen came to hand a few months later in a

FIG 5



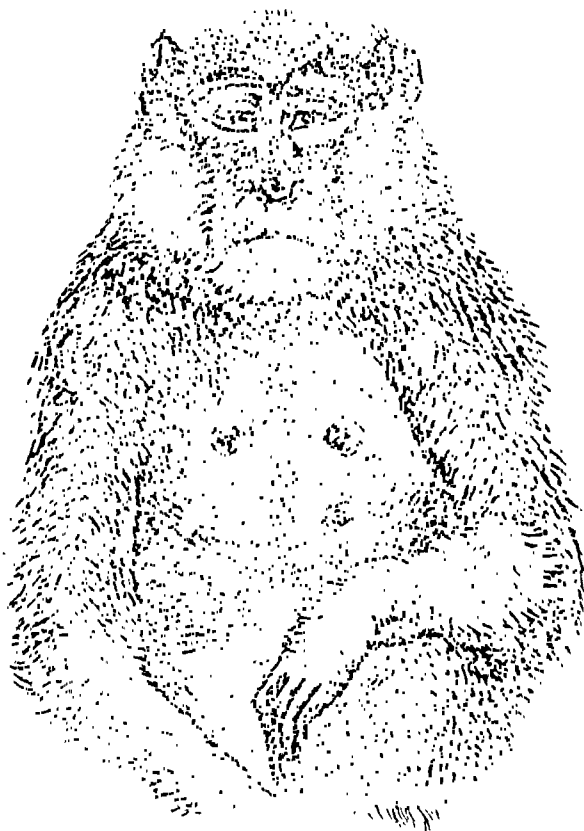
The thorax of a female Macaque monkey with an accessory mamma and nipple.

Patas monkey, *Cercopithecus patas*. This was a male monkey, and the accessory gland corresponded in position to that in the Macaque (Fig. 6). The parts illustrating the malformation are preserved in the Museum of the Royal College of Surgeons.

Among domesticated mammals it is well known that cows present occasionally accessory teats. Normally they are furnished with four, the extra teats being situated behind the posterior pair. In some cases they transmit milk, and cows have been known to furnish milk from seven teats. A medical friend has furnished me with particulars of a

cow with four functional and two rudimentary teats. In consequence of an injury one of the normal teats became obstructed. This accident was compensated for, as one of the rudimentary accessory teats enlarged and was regularly milked.

FIG. 6.



A supernumerary nipple in a male Patas monkey, *Cercopithecus patas*.

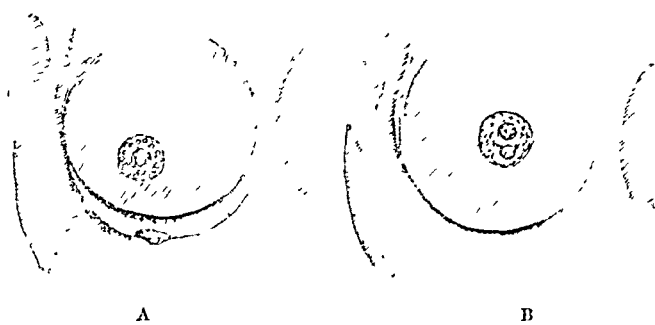
Goats normally possess two teats, but it is very common to find four present.

In addition to the varieties just considered, mention must be made of a variety of supernumerary glands which, though occurring in the line of the superior epigastric arteries, are not atavistic. Occasionally in women, but much more frequently in cows, we see a bifid nipple, at other times we find two mammæ coalesced, but with separate nipples (Fig. 7). Such a condition is due to dichotomy or abnormal division of the gland germ. Intermediate stages between two separate glands and a bifid nipple have been recorded. Such are not reversions.

We must now pass on to the consideration of aberrant mammæ. The most favorite situation is the axilla, where they may be found with or without nipples. Our knowledge of this subject has been considerably

advanced by Champneys.¹ This observer has found that the skin of the axilla in parturient women often presents nippleless "lumps" which may attain the size of a hen's egg. These "lumps" do not possess ducts

FIG 7.



A, a bifid nipple. B, a supernumerary mamma due to dichotomy

or pores, and though they may be noticed during pregnancy, more commonly attract attention on the third day after delivery; they enlarge with the breasts, and, as a rule, decline on the fourteenth day after delivery. These axillary lumps are limited to the hair-covered region, and occasionally may be made to furnish a milk-like secretion on pressure, but not spontaneously. Champneys also mentions cases in which he found mammae furnished with nipples containing ducts or pores lodged in the apex of the axilla, from which, after delivery, milk and colostrum could be expressed.

Axillary mammae have been recorded by many observers, but Champneys' paper contains the most complete account of them, and is valuable from the numerous references it furnishes.

Axillary mammae, like the normal gland, are liable to become adenomatous, and an interesting description of a case of this kind is given by Mr. A. H. F. Cameron.²

An excellent example of supernumerary axillary mamma is represented in Fig. 8, taken from Lichtenstern's classical memoir.³

In addition to the axilla, mammae have been described in the skin of the acromion and on the thigh; in these situations mammae are extremely rare. The well-known account of a functional mamma on the thigh rests on the authority of a committee from the French Academy of Sciences. Among other curious situations may be mentioned the labium

¹ Development of Mammary Functions by the Skin of Lying-in Women. *Med. Chir. Trans.*, vol. lxi. p. 419.

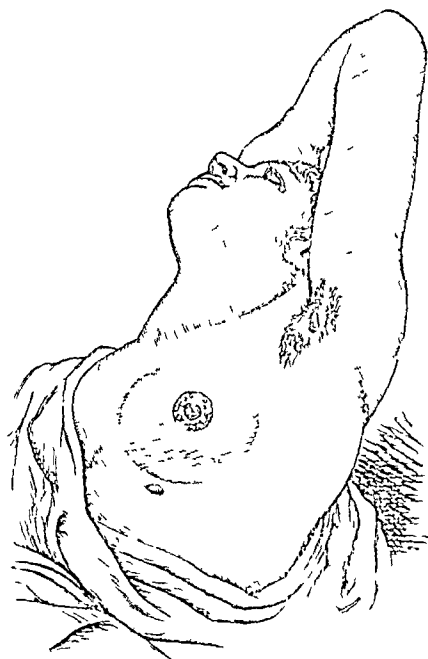
² *Journal of Anatomy and Physiology*, vol. xiii. p. 149.

³ Ueber das Vorkommen und die Bedeutung supernumerärer (accessorischer) Brüste und Brustwarzen. *Virchow's Archiv*, Bd. 73, S. 222.

major. I met with the reference to this in Ahfeld's well-known *Missbildung des Menschen*.

The case is described by Hartung¹ in an "inaugural² dissertation." Barth² has given an account of a nipple which grew on the face of a maiden twenty years old. The nipple was connected with the skin over

FIG. 8.



An axillary and thoracic supernumerary mamma in a woman. (After LICHTENSTERN.)

the parotid, immediately anterior to the right ear, and was surrounded by an areola and pigmented skin. When handled it became sensibly harder, resembling in this respect the true nipple, and gave rise to similar sensations when touched. At the girl's request it was removed. Microscopically it conformed to the structure of a true nipple, and glandular tissue existed beneath it. Of these various situations there is only one in which the mamma can by any means be regarded as atavistic, and that is on the skin of the acromion; in this instance the justice of its claim may well be questioned. True it is that in *Haplemur* the mammæ are brachial in position, but the lemurs are aberrant in so very many characters that extreme care must be exercised in drawing conclusions from them in regard to this matter.

The situations in which supernumerary mammæ occur in the human subject are chiefly remarkable as possessing a goodly crop of hairs, large

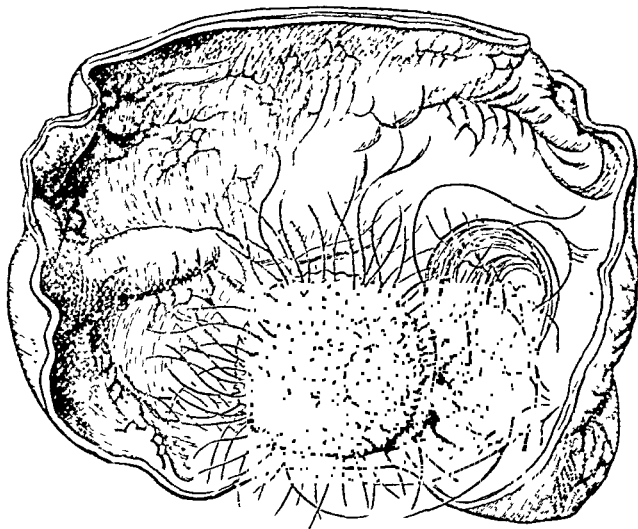
¹ Ueber einem Fall von mamma accessoria. Erlangen, 1877.

² Vuchow's Archiv, Bd 112, S 569.

sebaceous glands, or both. As we regard the milk-gland as modified sebaceous glands, so we may regard these aberrant mammæ as "sports" due to excessive development of the sebaceous glands. Some remarkable evidence as to the justice of this assumption is forthcoming from an unexpected source. Those very remarkable tumors of the ovary, dermoids, contain in their lining membrane sebaceous glands far exceeding in size any we find on the skin. Such cysts also often contain in addition tags of skin resembling nipples, and dotted with pores which indicate the orifices of sebaceous glands. Recently I have been enabled to trace in such dermoids every stage from a nipple-like cutaneous tag to a well-developed mamma, presenting glandular tissue, ducts, and a nipple filled with a fluid microscopically identical with milk, and containing colostrum corpuscles.

A striking example is represented in Fig. 9, but for more complete details the student should consult this reference.¹ Such mammæ are

FIG. 9.



A mamma in an ovarian dermoid. (Transactions Pathological Society, vol. xxxix.)

interesting in connection with the following opinion: Mr. A. H. F. Cameron mentions that Laycock suggested that a mamma might make its appearance in any part of the body, and there seems to be a power of producing this particular organ reminding one of the development of hair and teeth in ovarian cysts.²

Notwithstanding the scanty evidence which was at Darwin's disposal

¹ Transactions Pathological Society, vol. xxxix.

² Journal of Anatomy and Physiology, vol. xlii. 152.

when he wrote *The Descent of Man*, he regarded supernumerary mammæ as reversionary phenomena, although he thought the opinion weakened by the occurrence of mammæ on the thigh and back. Since Darwin considered this matter our knowledge has been increased on the subject a thousandfold. It seems to me perfectly clear that a careful analysis of the evidence shows that accessory mammæ may arise in the three ways I have endeavored to indicate, viz., by (1) atavism, (2) as "sports," (3) very rarely by dichotomy; and such is the object of this paper.

A CASE OF PERICHONDritis OF THE CRICOID CARTILAGE, WITH PARALYSIS OF THE CRICO-ARYTENOIDEUS POSTICUS MUSCLES.

POST-MORTEM RESULTS APPENDED.

By H. L. SWAIN, M.D.,

LECTURER ON DISEASES OF EAR AND THROAT IN THE MEDICAL DEPARTMENT OF
YALE UNIVERSITY.

THE patient, aged twenty-two years, a waiter in a restaurant, entered the New Haven Hospital on the 5th of May, 1888, presenting the history and the existing characteristics of a perfectly typical case of typhoid fever.

Of his previous history all that is at present accurately known is contained in the records of the Hospital for the previous year, 1887, which show that about the middle of June he was entered as a patient on the surgical side of the house, suffering from an abscess on the left side of the neck, which was situated near the insertion of the sterno-cleido-mastoid muscle of that side. In spite of careful treatment the healing process was slow, and as late as November of the same year there were still sinuses with small pockets of pus present. Dr. William H. Carmalt, senior surgeon to the Hospital, then did what was possible to do in the way of slitting up the sinuses and removing the old caseous matter which had gathered in some of the small pockets already referred to. As a result of this procedure, the patient got nearly well, and passed from sight. The parts, however, had healed subsequently and on his second appearance at the Hospital nothing but the cicatrices remained.

As before stated, the illness for which the patient was brought a second time into the hospital was an every-day case of typhoid fever, and the only symptom which I will mention as not being always present in such cases was marked hoarseness. As a slight bronchitis was present, this symptom did not receive much particular attention, and during the weeks that followed was lost sight of. On recovery of the patient so as to be able to talk, the hoarseness seems to have improved, as it was not prominent.

Toward the first of June, after a not very severe illness, convalescence seemed assured, and by the second day of that month was fully established, the records of the case showing the temperature as having been

about normal for several days past. On the 6th of June, in the morning, considerable hoarseness is recorded, which toward evening was more marked and accompanied by a somewhat labored but not more frequent respiration. In spite of treatment this condition of the throat did not improve, either then or on the following day. The evening of the 8th was marked by a decided rise in temperature to 102° Fah., and soreness of the throat was complained of by the patient, although he could not locate it in any one part. The cough again became slightly prominent, while the respirations were decidedly more labored, being almost croupy. Examination of the chest gave negative evidence as regards any complication there. Under active treatment, counter-irritants locally applied, diffusible stimulants, gargles, etc., a comfortable night was passed, and symptoms improved until the next morning when a sudden attack of dyspnoea occurred. Respiration, especially the inspiratory act, seemed very much interrupted, and almost complete aphonia was present. Temp. 101.8°; pulse weak and slow, 76 per minute. A consultation was called by the house physician, Dr. Robert Bradley, of Drs. Carmalt and S. D. Gilbert, who found the obstruction and the respiration to be laryngeal, the chest yielding entirely negative results, although the attack somewhat resembled an asthmatic dyspnoea. Examination of throat showed no false membrane. Turpeth mineral was administered, and the emetic effect relieved the dyspnoea. Examination of the throat next day by means of the laryngoscope revealed nothing further except there was no oedema, or marked swelling of the glottis. The respirations were, however, extremely labored, although apparently amply supplying oxygen to the lungs. In the evening another sharp attack of dyspnoea was again relieved by the use of emetics. Temperature lower than yesterday.

The following day, no improvement having taken place, on consent of the consulting physicians including Dr. Thacher, the writer was requested to examine the state of the larynx.

The status of the patient at that time was as follows: The sufferer was lying partly on one side, the right, in a half-reclining position, breathing very laboriously about twenty times to the minute. Each inspiration was accompanied by a croupy sound, almost like a whoop, which was audible at a considerable distance and presented no characters due to the presence of mucus or other exudation. Each expiration was easy and almost noiseless. There was some sinking in of the parts in the supraclavicular region on inspiration. In attempting to speak, the inspiration was much more difficult, and phonation was very imperfect. The sounds produced were very rough, and the cough "barky." The words were pronounced clearly, and the tone was not a whisper, but a distinct, loud sound. Chest had just been examined with negative results. Dyspnoea was agreed by all to be evidently laryngeal, and paralysis of some of the laryngeal muscles had been suspected. Examination of the neck revealed larynx not swollen, freely movable, not tender on pressure. Outer surface was reddened by counter-irritants. No tumor or abnormality could be demonstrated in the vicinity of the larynx, or its recurrent nerves, save the cicatrices spoken of in the first part of the history as occurring on the left side of the neck over the sterno-cleido-mastoid muscles. The nature of these was such that it was not thought possible that they could in any way involve the recurrent nerve of that side, and there were no enlarged glands or indurated spots to be found

that could press on that nerve. The pharynx was somewhat reddened, but presented no evidence of false membrane.

The laryngoscope revealed the larynx markedly congested throughout the whole anterior. The reddened chords were in complete contact in the phonation position, remaining without attempt at motion during inspiration; during expiration showing a slight response to the outgoing air. The processus vocales were, however, rotated somewhat outward, slightly abducted, and through the very small opening thus made the inspired air found its way into the trachea below. No appearance of any marked swelling of the mucous membrane of the arytenoid cartilages, posterior commissure, or ary-epiglottic ligaments. False vocal chords not infiltrated. There was no ulceration visible.

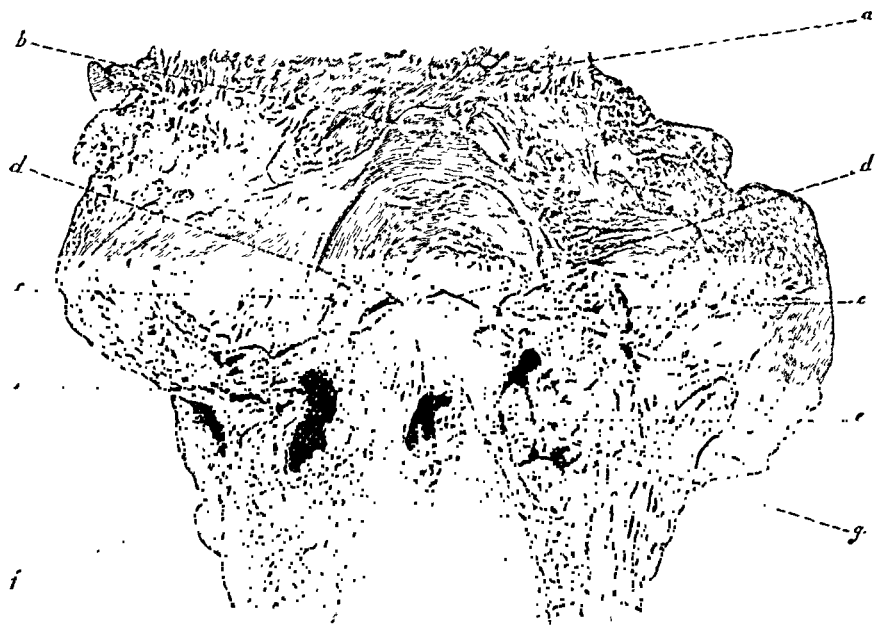
The diagnosis was given as paralysis of the crico-arytenoideus posticus muscle. The cause of the paralysis, since we could find no pressure or other interference with the recurrent nerves, was referred by the writer as a sequela to the typhoid fever, he having remembered a case reported somewhere in literature, in which this construction was the only possible one. (The case referred to is in Ziemssen's *Handbuch*, Band iv. Erst. Abth.) The evident inflammation in the larynx seemed entirely inadequate as an explanation, although in the case of the muscular affection due to the fever it would have been an exciting cause. A question raised by Dr. Carmalt, was whether there might not be some subglottic obstruction which would account for the immobility of the vocal chords. Of this we could and had seen nothing, so it was put aside, the position of the chords accounting sufficiently for the dyspnoea. No perichondritis could be assumed to exist, it having presented no evidences of itself up to that time.

The diagnosis being settled as fairly as possible, tracheotomy, the only relief, was performed on the following day by Dr. Carmalt. The collapse which had supervened just previous to the operation was readily controlled after the dyspnoea was relieved by the introduction of the tube. From the very first the relief to the patient in breathing was complete, and save for a slight erysipelatous blush on the 15th, which soon passed away, the history for the next ten days was uneventful. There was considerable bronchitis, but the tube was well borne, and the patient gained in strength each day.

At this juncture Dr. Thacher and the writer examined the larynx once more. The patient was walking around, breathing easily, and could articulate with comparative distinctness by stopping the tracheotomy tube. A change had taken place, however, in the larynx. The redness was somewhat less, but there was a marked swelling over the left arytenoid cartilage, aryepiglottic fold, and posterior commissure. The left arytenoid cartilage seemed somewhat elevated and forced somewhat past the median line toward the right side, and this, with a slight swelling of the left false, concealed the true vocal chord almost entirely from sight. The right vocal chord was visible, and an attempt to assume the median position was evident on phonation, the position of its fellow, however, hindering the motion. Evidently a perichondritis was present, but its cause was, of course, doubtful.

At the suggestion of Dr. Thacher, a small mirror was ordered, of a size enabling us to pass it through the tracheotomy opening, and look upward into the inferior portion of the larynx. Unfortunately, this arrived too late for service, for on the night of July 1st symptoms of suffocation came on suddenly, and blood was expelled from the opening in the trachea, at first through the tube, later through the wound itself. The re-cleaned tube failed to relieve, and in a few minutes death ensued. Tracheal hemorrhage had supervened, although on going to sleep everything was as it had been for days past. All efforts to assist in getting rid of the blood were without avail.

The *autopsy*, July 3d, by Dr. M. C. White, pathologist to the Hospital, revealed outside of the respiratory tract nothing which is not usually found in cases of death during the convalescence from typhoid fever. In the right bronchus was about half an ounce of clotted blood, extending downward from the bifurcation. No lesions were present in the lungs or heart, nor could any point be found from which the blood could safely be said to have come.



a, Posterior surface of tongue, roughened by papillae. *b*, Epiglottis. *c*, *c'*, Arytenoid cartilages—*c* somewhat enlarged. *d*, *d'*, False and true vocal chords. *e*, *e'*, Cavity of abscess; containing loose bit of necrosed cartilage. *f*, Tracheotomy opening. *g*, The end of the cricoid cartilage.

On the posterior wall of the larynx, between it and the œsophagus, below the level of the vocal chords, was an abscess about as large as a walnut, and containing caseous matter. The larynx and œsophagus were removed and the former opened from behind in the usual manner, the cut dividing the abscess in two. The accompanying photograph, taken by Dr. M. C. White, from the specimen preserved in alcohol, shows the abscess divided into two parts, *e* and *e'*, one on either side of the specimen; *e'* will be seen to contain some of the caseous matter mentioned, which on closer examination proved to be made up of quite a good sized

piece of necrosed cartilage and other detritus. The abscess involved the cricoid cartilage, and on close inspection of the photograph the free end of the cartilage will be seen, g, on the edge of the abscess on the right side. Here the cavity of the abscess is situated wholly on the laryngeal and inferior surface of the cricoid cartilage. On the other side one finds no projecting portion of cricoid cartilage, and the left arytenoid, c, seems freely movable in the superior wall of the abscess, although its substance does not seem to be involved in the necrotic process. By probing deep into the abscess cavity of that side one finds at the anterior extremity of the cavity the end of the cricoid cartilage; in other words, the abscess seems to have involved completely the left half of the cricoid cartilage, posteriorly, and to have destroyed a not inconsiderable portion of it. The comparison of the two arytenoid cartilages shows the left, c, to be distinctly larger. The true and false vocal chords, d and d', seem to be intact save for a very small ulceration on the lateral surface of the processus vocalis of the right side. At no point is there any indication of an opening into either larynx or œsophagus, on the part of the abscess.

We had, therefore, in this case to do with a perichondritis of the cricoid cartilage, which by a slow process led on to suppuration and necrosis of the cartilage. This in time, by virtue of involving the inferior and posterior surfaces of the cartilage, caused the posticus paralysis, and that, previous to the time when any marked swelling could be seen by the laryngoscope. This process then displaced the arytenoid of the left side in its progress, and gave rise to the changes which were noted in the writer's second examination of the case. The final act in the drama was brought about in some at present inexplicable way, for the hemorrhage does not appear to have come from the tracheotomy wound, as the anterior walls of the larynx and trachea are not blood-stained. The fact of the right bronchus being the one filled by the clot is rather for than against the blood having come from above. No tubercles were to be found and no minute aneurism, such as might have occurred in the right lung, and by bursting given rise to a hemorrhage. The clot did not extend very far into the smaller bronchi.

The peculiar features of the case are: first, the fact of such an abscess existing for so long a time, and causing such marked changes, and still giving rise to no symptoms of dysphagia; second, that the postici muscles should have been paralyzed before any marked endo-laryngeal swelling was manifest; third, that no change appreciable externally had ever been noticed; fourth, the manner of death, and its difficult explanation, owing to the negative post-mortem results.

In closing, I desire to thank the gentlemen mentioned in the paper for access to the hospital records, and other kindness tendered me in preparing this simple report of the case in question, as also for the photograph which so admirably explains itself.

A NEW KNIFE FOR THE EXTRACTION OF CATARACT.

BY EDWARD JACKSON, A.M., M.D.,

PROFESSOR OF DISEASES OF THE EYE IN THE PHILADELPHIA POLYCLINIC.

No one who has closely observed the healing of wounds in any part of the body needs to be told that perfect approximation and complete union by first intention are only possible when the opposing surfaces are smooth and uniform. Every inequality of the surface tends to prevent perfect apposition, and maintain accidental displacements indefinitely; and where inequalities are present the process of healing must be prolonged, to include the rounding off of projections and filling in of intermediate depressions; it being generally impossible to make all the projections of one lip of the wound fit accurately into the depressions of the other, to which they correspond.

The cornea being non-vascular, all material for the repair of its injuries must be drawn from a comparatively distant base of supplies; and it becomes of the greatest importance that the amount of such material required should be kept down to the minimum. The operator cannot too highly appreciate the importance of making a perfectly smooth corneal incision for the extraction of cataract, so that its lips will come into perfect apposition, ready to adhere at every point; not only to secure rapid healing, but to keep down the subsequent astigmatism due to cicatricial contraction of the new material poured out to occupy the gap.

The Beer's knife, once universally employed in cataract extraction, still preferred by some operators, and recently growing again in favor with others, was admirably adapted to secure smoothness of the corneal incision. Being once properly entered, it only required to be pushed steadily forward, acting as its own guide, until a necessarily smooth section of the cornea was completed. The "Holzschnitt" of von Jaeger, recently advocated by Dr. B. A. Randall (*Trans. American Ophthalmological Society*, 1887, p. 505), has something of the same advantage. When, however, the point of the Beer's knife is once fairly entered the direction and shape of the incision are fixed and cannot satisfactorily be changed; although until the incision is well advanced the point of the knife, unguarded in the anterior chamber, may, by a sudden movement on the part of the patient, be thrust through the iris or into some unintended part of the cornea, damaging the eye or hindering the completion of the operation.

Graefe's knife has largely superseded Beer's because it is safer and more manageable. With it, after the puncture has been made, we are

still free to make the counter-puncture where we please, and the counter-puncture being the next step in the operation, when it has been made the point of the knife has been carried out of the anterior chamber away from any possibility of doing harm. When the two ends of the incision have thus been fixed, there is comparatively little danger of its distortion or misplacement by unsteadiness on the part of the patient; and the only serious accident liable to happen is the falling of the iris before the edge of the knife, with the rapid escape of the aqueous humor. But with the Graefe knife, unless special care is taken to avoid it, one will push forward the whole available length of the blade without completing the corneal incision, which must be finished by a sawing motion, or a considerable withdrawal and second forward thrust; causing always one or more irregularities in the lips of the wound to interfere with perfect apposition, and rapid, smooth healing. When, however, the incision is completed at a single thrust, it is by the exertion of a distinct dragging force, that makes the fixation of the eye difficult, and which must be applied with perfect steadiness and continuity, or changes of direction in the cut, making angles in the lips of the wound, will result. With the Beer's knife perfect fixation is more of an essential, but it is more easily attained. Its wedge shape causes a slight force thrusting it forward to exert a much greater cutting force, which is balanced by an equal thrusting of the smooth rounded back of the knife against the angles of the wound; the slight forward thrust being all that tends to displace the globe, and requires to be met by the fixing forceps or fingers. And experience shows that the tissue that sustains the balancing pressure exerted by the back of the knife, is not in the least damaged by it.

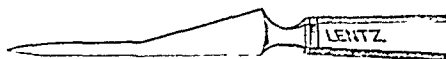
The instant that one starts with the Graefe's knife to cut through the bridge of tissue that remains when the counter-puncture has been made, the back of the knife is withdrawn from the angles of the wound and the aqueous humor escapes. But with the Beer's no such withdrawal occurs, the knife continues to occupy the whole of the wound until the section is completed, and the aqueous may be retained throughout, or allowed to escape quite gradually. The advantages of the Beer's knife, then, are, smoothness of incision, ease of fixation, retention of the aqueous; of the Graefe's knife, more complete control of the incision, and lessened liability to accident or hindrance, from unsteadiness on the part of the patient. The advantages of the latter depend on its narrow point; of the former, on the widening of the blade so that it continuously fills the incision. May not the two be combined in one knife?

For the past year I have been using the knife represented by the accompanying figure. It seems to answer the above question affirmatively, and to have no serious defect to offset its merits.

The point, and the part next the point, for a distance of fourteen

millimetres, resemble exactly the same portion of a Graefe's knife. Then there is an angle *in the back* of the knife, and the blade widens evenly like a Beer's knife until it reaches a width of six millimetres at twenty-eight millimetres from the point, where it terminates.¹

With this knife an incision could be made as with a Graefe knife throughout. But it is designed so that after the puncture and the counter-puncture have been made, when the point of the knife is well out of the anterior chamber, and the extent of the incision has been fixed beyond any chance of mishap, to complete the incision, as with a



Beer's knife, by a steady forward thrust. One can with this knife, as is often done with the Graefe's knife, introduce the blade parallel to the plane of the iris, and after making puncture and counter-puncture, rotate the cutting edge forward before completing the incision. But to get the greatest smoothness of the lips of the wound I have always tried to introduce the knife with its cutting edge in the direction in which I wished to keep it until the incision was completed. The dimensions above given are those adapted to an incision which commences somewhat back in the overlapping scleral tissue, and has its centre fairly within the clear cornea; an incision rather long from side to side, but not very deep vertically.

This knife was shown at the meeting of the American Ophthalmological Society, in July last. In the August-September number of the *Centralblatt für Augenheilkunde*, Dr. Inouye, of Tokio, Japan, describes and figures another form of knife, which he has devised to combine the advantages of the Beer and Graefe knives. In it the widening of the blade is brought about by a concave curving of the cutting edge, a method which seemed to me open to the serious criticism that it would be more difficult to keep the knife perfectly sharp. The same objection applies to the plan of having the angle in the cutting edge.

The advantages of the knife I have described are:

Control and safety of incision, through puncture and counter-puncture.

Smoothness of the section, through its completion by one forward thrust.

Retention of the aqueous until near the completion of the section.

Ease of fixation, through the counter-pressure of the back.

A shape of cutting edge most readily kept in good order.

¹ Made by Lentz & Sons, 18 N. 11th Street, Philadelphia.

REVIEWS.

A SYSTEM OF GYNECOLOGY. BY AMERICAN AUTHORS. Edited by MATTHEW D. MANN, A.M., M.D. Volume II. Illustrated with four colored plates and three hundred and sixty-one engravings on wood. 8vo. pp. xiii., 1180. Philadelphia: Lea Brothers & Co., 1888.

THE second volume opens with a paper by Dr. Carroll Lee on "Diseases of the Vagina." Dr. Lee first considers vaginitis, and at the outset denies the existence of specific, or gonorrhœal, vaginitis. As the latest authoritative utterance upon this subject the claim is important. Such a claim is, in no way, inconsistent with the theory of Noeggerath of "latent gonorrhœa," or of the infecting nature of its pus. This is true of pus from any source.

It is simply necessary to give the contaminating secretion in the uninfected individual the habitat of its origin in order to reproduce the infection. We cannot find any fault with Noeggerath's theory; it is simply the terms with which it is expressed. A cause cannot be called latent that never ceases to act so long as it is present. No one would call gleet a latent clap. It is clap, pure and simple; and differs in quantity, not quality. Gonorrhœa in women is far more costly to life and health than syphilis. The only singular thing about it is that we should observe an event in disease as common as a catarrhal cold for a matter of two hundred years or more, and know nothing about it until gynecology pointed out the way. It came with what we may call realism in science. Medicine is more and more becoming the science of real things, not of opinions or theories. In this age every man who will leave his mark upon the science of his chosen field is to it what Zola or Tolstôï is to literature.

Malformations, vaginismus, displacement of the vaginal walls follow in their order. In the latter relation Emmet's operation for diminishing the size of the vaginal outlet is described, and although well illustrated, proves the impossibility of giving a clear working idea of this operation to one who has never seen it. Emmet's operation narrows the outlet, but does not restore the perineal body. The operation is not commonly made; but when it is brought into active competition with the more common operation we will know more about the value of the perineal mass as a sustaining force. Rupture of the vagina, hematoma, and neoplasms conclude a valuable contribution to the book.

The Editor has been fortunate in securing Dr. Engelmann as a contributor in a field that he has made his own. The author opens the vexed question of uterine reflexes without any attempt to evade the issues from the general practitioner's standpoint in the following definition. "By the term hysteroneuroses, I have designated those phenomena which simulate a morbid condition in an organ which is in an

anatomically healthy state, and which are due not to structural changes in the organ in which they appear, but to morbid or physiological changes in the uterus or ovaries." The context to this, while it may answer as a general statement until we know better, does not fulfil the demands of a definition. "The hystero-neurosis is a sympathetic hyperæsthesia, the result of reflex action." The specific condition is not always a phenomenon of the reflex, as a little attention to the author's contribution will show. As limited space will prevent anything like an extended notice of the one hundred and fifteen pages of the author's elaborate contribution, we must content ourselves with the opening statement, which will give the reader a good general idea of the limitations Dr. Engelmann places upon uterine reflexes; we quote:

"The irritation of the ganglionic nervous system caused by the morbid changes in uterine and ovarian tissues is most readily conveyed to the spinal and cerebral centres, following sometimes one, sometimes another path, and results in the lumbar and hypogastric pains, in the burning or pain in the top of the head or back of the neck. Most intimate is the connection of the ganglionic with the vaso-motor nerves. By their connection with the vagus are brought about the palpitations of the heart, the nausea and vomiting by which the stomach tells of uterine changes. The anastomosing fibres of the solar plexus account for the gaseous distention of the abdomen, the constipation and diarrhœa by which uterine changes find expression. These symptoms are entirely distinct from the transitory and variable ones of hysteria, which I am inclined to place among the cerebro-spinal affections, and which are but indirectly influenced by the uterus and its annexa. As hystero-neuroses, I consider only such appearances of disease, without structural changes in the organ in which they occur, which are the direct results of reflex nervous influence, depending upon changes in uterus or ovaries, coming and going, aggravated or improved with corresponding changes in the determining causative disease."

While the author is probably right concerning the cerebral origin of the perversions of consciousness and sensation, termed hysteria, yet he does not make it clear to the average medical mind how he made the distinction between hysteria and hystero-neuroses by simply placing the former among the cerebro-spinal affections, knowing, as we do, how deeply the purely cerebral functions are sometimes involved in ovarian changes. The author adds the following limitations which are important:

"We must strictly eliminate coexisting symptoms and symptoms arising from direct mechanical causes; thus, the stiffness of the leg, with the shooting pain which follows the course of the nerve, often found in ovarian and per-uterine disease at the time of the menstrual period, is not an hystero-neurosis, not a reflex nerve symptom, but the direct result of pressure by the congested tissues or the enlarged ovary upon the pelvic portion of the nerve; frequent and painful micturition, as it is observed during the menstrual period, may be a neurosis pure and simple, but it is more frequently the result of increased pressure of the congested uterus upon the urethra and bladder."

While there are many gynecologists who will dissent from the theory advanced in the latter part of the above quotation, yet, on the whole, the author's views are sound. The elaborate contribution is timely, and will do much to clear up the obscure places in the symptomatology of uterine disease.

"Extra-uterine Gestation" is the contribution of Dr. T. G. Thomas. Of this eminently practical paper we have space to give only the summary of the author's views upon treatment. His conclusion is: "A diagnosis

of extra-uterine pregnancy being arrived at, destroy foetal life as promptly as possible." For this purpose he advises the use of the galvanic or faradic current, without puncture, the future treatment by laparotomy being favored by the rapid decline in vascularity that follows foetal death.

"If, after rupture," he further states, "the case progresses favorably, behaving like an ordinary one of hæmatocele, laparotomy should be avoided and the efforts of nature encouraged and relied upon. In my thirty-three cases, I have had one of unquestionable sac-rupture entirely recovering under this plan. Should the pregnancy have advanced to full term and the child die, as it always does at this time from the spurious labor which then occurs, the surgeon should quietly await indications for interference, feeling assured that as time passes the placenta is probably shrivelling, and all the parts becoming less and less hyperæmic."

In conclusion, he says, "In twelve cases, a little less than one-half of all the cases seen by me, electricity was employed as a foeticide; of these, all recovered." This paper may be said to define the American method, so far as we can be said to have a method, of the treatment of ectopic pregnancy. We know of but one native gynecologist who advises the universal resort to laparotomy in every stage of ectopic pregnancy, and he had what we may call the misfortune to have had—a successful case of recovery after laparotomy.

Dr. Samuel W. Gross contributes the section upon "Tumors of the Breast." Dr. Gross's paper is splendidly illustrated and complete in its descriptive parts, and amounts to nearly a volume in itself. The tone of the paper is very encouraging to surgeons to remove carcinoma by the most radical methods with wide skin and axillary dissections, even when flaps are insufficient to approximate and extensive areas have to repair by granulation.

"Diseases of the Breast other than Tumors," is contributed by Dr. Roswell Park, comprising congenital defects and excess, irregular or abnormal secretion of milk, hypertrophy, atrophy, injuries, inflammatory affections, mastitis, fistulæ, tubercles, and syphilis.

A good paper, ample in its working details, is given by Dr. E. W. Jenks upon "Fistulæ." The historical portion is very complete, both in description and illustration. The author has expended a large amount of labor upon his paper, and it is in every way worthy of this painstaking gynecologist.

Dr. William H. Baker, of Boston, takes up the "Diseases of the Bladder and Urethra." The author follows Skene very closely, and the latter follows Winckel, with the result of making this section of the book more conventional than there is any need of being, as Dr. Baker is both original and has plenty of ideas on all gynecological subjects. The truth is, that the surgery of the female urethra and bladder is at least one generation behind that of those conditions to which they are congeners in the male.

Dr. Sutton writes upon "Non-malignant Tumors of the Uterus." The author does not make any attempt to harmonize the conflicting views of intra- or extra-abdominal treatment of the uterine stump in abdominal hysterectomy. We are safe in saying that here alone have we any serious doubts as to methods concerning abdominal surgery. It will be soon worked out, but the time is not yet ripe for the author of such a *résumé* as that of Dr. Sutton to pass under judicial review the conflicting

testimony upon the subject. Dr. Sutton has wisely refrained from this tempting phase of the subject, especially to one of such positive views as the author upon most surgical subjects. Good working descriptions of the different methods are given; and the whole subject is characterized by good common sense, making a valuable contribution to the volume.

Dr. Lusk takes up the consideration of the hopeless subject of "Malignant Diseases of the Uterus" with courage. We think Dr. Lusk wisely says: "The legitimacy of total extirpation in the treatment of carcinoma uteri is no longer called in question." The operation as performed by experts shows a mortality of 15.1 per cent., and a mortality based upon a much larger array of cases, but gathered from a miscellaneous number of operators, give a fatality of 24 per cent. Most clearly from this it appears that vaginal uterine extirpation is an operation for the gynecological expert, and upon the results only of such should we base any conclusions. Yet the gynecologist, rarely getting his cases at first hands, finds few opportunities to perform the operation under the most favorable conditions. Any suspicion of the invasion of near parts renders the legitimacy of the operation doubtful, and when the invasion of vaginal and connective tissue relations of the organs is evident, the operation offers even less hope of doing good than the combined use of the curette and chemical cautery, especially as the latter method gives great facility of treating the relapses, while with the former the gynecologist has reached the limit of his usefulness. An ideal case for vaginal hysterectomy would be when the disease was rigidly limited to the vaginal cervix, and the woman had passed the climacteric. Even here the curette and chemical cautery very generally give permanent results.

Dr. Bache Emmet gives us the section upon "Lacerations of the Cervix Uteri," and if we cannot have T. A. Emmet upon this interesting subject we prefer it at the hands of the present author. The only criticism that can be made upon this article is, that this opportunity should have been taken to give authoritative expression to the fact that Emmet's operation is not made simply to draw together, and retain in that position sufficiently long to heal, the lacerated edges of the cervix. That is only one idea of the operation. But the operation is given curative value from the fact that masses of cicatricial tissue on the edges and at the back of the rent are removed when the operation is properly made; while, on the contrary, if the mucous membrane only is removed, the indurated tissue being left, the patient, either in local or general symptoms, is in no way made better. In reading descriptions of the operation it is quite common for the operator to say that he removed the mucous membrane and brought the edges of the laceration together; and from the results frequently observed there is no doubt that this is all that he did do. As a matter of fact, we do not get widespread reflex symptoms until the cicatricial margins of the rent develop. This is the reason that we are frequently aware of extensive injury to the cervix, while the general health of the woman is unaffected, and, aside from cervical catarrh, no local symptoms are observed. If we inquire into the reason of this, we will note that induration has not yet taken place, and the torn edges are soft and congested. Observe the same subject when she comes to you later, as she surely will, complaining of new local and general symptoms, and on examination we will find that a revolution has taken place in the condition of the rent, the edges have become pale and indurated with a plug of hardened tissue at the bottom of the rent. Thorough removal of these

masses oftentimes makes a difficult and bloody operation, as it is a very common matter to open pumping vessels at the fornix of the laceration.

This we claim is the proper import of trachelorrhaphy, and such, indeed, is the teaching of Emmet, and the author says so in the present contribution; but it is taken, in a large measure, for granted that such is the understanding on the part of the profession. We are satisfied that such is not the case, and the present would have been an excellent opportunity to correct, in an article written under the inspiration of the great master himself, what we believe to be a growing error. The operation is well described, but the operation, as illustrated, is difficult to understand from the cuts. Dr. Bache Emmet writes so well that it is to be regretted that we do not see more from his pen.

Dr. Busey writes the chapter on "Chronic Inversion of the Uterus." It is a well illustrated *résumé* of the subject.

Dr. Howard Kelly contributes a well-written and finely illustrated chapter on "Injuries and Lacerations of the Perineum and Pelvic Floor." Many of the cuts are new and carefully studied with a view of the working details of the various repair operations required by the parts. It is one of the most complete contributions to the work.

Dr. William Goodell takes up the subject of "Ovarian and of Extra-ovarian Tumors." The author's description of the operation of ovariectomy is entirely characteristic, and as his work is so well known through society reports, it may be passed without critical notice.

Dr. Robert Battey and Dr. Henry C. Coe, of New York, enter jointly into a description of the "Diseases of the Ovaries." The former takes up the subject of Battey's operation, and begins by defining the limits, not so much of the operation itself, as of the results to be obtained by the proceeding so called. If we were to permit Dr. Battey to define the operation, which he thinks ought to be called by his name, he would apply it to a surgical procedure of a mythical character. For instance, he says, "it is not an oöphorectomy, nor is it simply the removal of appendages from the uterus; but it is a surgical procedure by which we aim to bring about a great physiological change in the system of the patient for the remedy of disease." He goes on to make a bad matter worse by the succeeding context. "The natural change of life which occurs at the climacteric is in no sense a 'spaying' or castration of women, and it is quite as inappropriate to attempt to apply either of these terms to the artificial change of life which attends Battey's operation.'"

Battey's operation is not then, according to its author, any definite surgical method, but rather the *results* to be attained by any surgical proceeding whatever. It has a striking resemblance to the specifications under the Bell telephone patents. All of this is equivalent to saying that Dr. Battey is a good surgeon but a poor lexicographer, who does not mean all that he says, for, if we examine the surgical method by which he hopes to attain this end we will find that it is of one definite character, namely, the removal of the ovaries through either a vaginal or abdominal opening. Dr. Coe takes up in the second section the "Diseases of the Ovaries," which is exhaustive, well illustrated, and well written.

Drs. Coe and Wylie jointly write the description of the "Diseases of the Fallopian Tubes;" the former talking up the pathology of the subject, and the latter the surgical treatment. Of course, Dr. Wylie is

nearly aggressive in the expression of his opinion concerning salpingitis as a nearly ever-present disease in women. He says:

"In my opinion, when the frequency and the gravity of diseases of the Fallopian tubes are generally understood the occupation of the mechanical pathologist, who assumes that most of the ills of women are due to uterine displacements, and that their ailments will be overcome when version or flexion is corrected and the uterus held by a pessary in an ideal normal position—will be substantially gone."

Among the gynecologists of Dr. Wylie's acquaintance, we do not believe he can name a man who corresponds to the description we have just quoted. As a matter of fact, the one-idea men in gynecology are the laparotomists. It is an extraordinary thing that an operation that is now successfully made at the country cross-roads should be allowed to dominate a large section of gynecologists. We know an eye doctor who is quite successful as a laparotomist, but always fails when he attempts the repair of the perineum. Dr. Wylie has had up to January 1, 1888, one hundred and fifteen operations for the removal of the appendages with six deaths; which makes the operation nearly equal the dangers of ovariectomy in good hands. The mortality was in his early operations. That the operation has its field of usefulness no one can doubt, the only difficulty is that a man can give up to the idea of salpingitis as a basis of gynecology and, much to his own mental damage and the good name of his calling, hold in contempt all who differ from him.

One of the most elaborate articles of the volume is by Dr. Stephen T. Howell, of Buffalo, on the "Pathology of Ovarian Tumors," extending over one hundred pages. It is well illustrated by new cuts, and forms a useful addition to the literature of the subject.

Dr. Mann, of Buffalo, contributes the "Clinical History and Diagnosis of Pelvic Tumors other than Uterine and Tubal." This section could well have been omitted, as each previous author had gone with sufficient elaboration into the subject of diagnosis. The subject of differentiation of pelvic tumors is placed well in view, a matter worth considering in such a large and crowded volume.

The carping critic will, in all future generations, be unable to say that the American System of Gynecology was written in the interest of the mechanical school. The vexed subject of "Displacements of the Uterus" is disposed of by Dr. George T. Harrison in sixty pages, including history, pathology, etiology, treatment, mechanical and operative; with Emmet's, Alexander's, and Byford's operations. The author is very positive in his opinions, which we hope may be valuable. But it certainly must be a source of regret that a matter in which the family physician is so much interested should be given such limited consideration in a volume in which he is supposed to be especially interested. We regret, exceedingly, that any opinion unfavorable to either the utility or scientific value of an article has to be expressed where everything has had such exceptional value and merit, but we believe that every scientific gynecologist will join in the dissent from both the matter and manner of the author's treatment of this subject.

We may well feel gratified at the completion of a work that from the very beginning of the idea of a system of gynecology, was full of difficulties. Dr. Mann has acquitted himself well of a laborious and diffi-

cult task ; while gynecology for all peoples and times has been enriched by the material gathered together in the two volumes that compose the work. Of the many systems of late by coöperative authorship, none shows such consistent and even work, where idea and methods fuse so evenly that differences of opinions are scarcely noticed. It is a good work from the hands of good and earnest men and as such will endure and keep its place.

E. V. DE W.

DIE TRAUMATISCHEN NEUROSEN. Von DR. HERM. OPPENHEIM. Pp. vi. 146. Berlin: A. Hirschwald, 1889.

THE TRAUMATIC NEUROSES. By DR. HERMANN OPPENHEIM.

THIS excellent little brochure contains an admirable summary of the present knowledge concerning those forms of neurosis which follow injuries ; and it may be commended, not only to the medical reader, but to those members of the legal profession who interest themselves in the forensic aspects of railway injuries.

In the introduction the author traces the progress in the knowledge of these affections from the time when Erichsen first called attention to them in his work entitled *Railway Spine* (1868) down to a recent date, when the underlying condition has been recognized as a functional affection of the entire nervous system, but more especially of the brain. The references to the literature of the subject are quite complete, and full justice is done to the important contributions of American authors to this class of affections.

The material upon which the work is based consists of a large number of cases which have come under the author's observation in the Charité Hospital of Berlin ; and thirty-three of these cases are carefully described in the second chapter, which forms an important clinical contribution to this subject. In the remainder of the book the kind of injury producing these neuroses, the special symptoms manifested, and the prognoses and treatment are very concisely described.

Severe concussion of the nervous system is usually produced by the jar of railway collisions or by the shock of railway accidents. The patient is thrown from his seat against the car or tossed to and fro, and, although it is admitted that a stretching of the ligaments about the spine, or even laceration of the muscles may occur, yet, as a rule, the external evidences of injury are very slight, or may be absent. But lesser injuries may cause the same effects. Thus, accidents occurring in factories, where a brick or hammer falls upon the head or back of the workman, or where he steps from a ladder, or even the shock of a sudden slip upon the ice and consequent fall, are cited as causes of traumatic neuroses. This proves that the manner or the situation of the trauma may vary greatly. The essential element in all cases appears to be the severe emotional or mental shock attendant upon the accident ; the fright or the excitement being sometimes followed by a train of nervous symptoms when there has been no physical injury whatever. This mental shock may not be apparent at the time, for patients have been known to help the injured in an accident and go about for some time

without any evidence of disturbance, and then suddenly show all the symptoms of the emotional strain.

"In some cases at once after the injury, in others after an interval of weeks or months the nervous symptoms appear, differing widely in kind and degree, yet having so many features in common as to present a typical picture of disease. . . . The first result of the accident may be a severe shock, lasting several hours or even days; more frequently a short stage of unconsciousness or bewilderment occurs, to be followed by apparent recovery; very rarely a true mental derangement, in the form of hallucinatory confusion, ensues immediately. In the majority of the cases the injured patient presents no symptoms at once, is able to render aid to others, and to continue his duties if he is an employé. But after an interval the first evidences of nervousness appear, causing, perhaps, but little remark, but increasing. Sometimes the attention of both patient and physician is directed for weeks to some surgical injury, while the nervous symptoms, whose commencement has been overlooked, gradually develop.

"The first symptoms are usually entirely subjective; the patient has pain, either in the injured part, or, if there has been no local injury, in the back, especially in the lumbar region. This pain is increased by movement, and compels the patient to hold the parts stiff when he walks or moves. Another subjective symptom is an indefinite sensation of restlessness, excitement, or anxiety, which, as it increases, leads to a change of mental tone, and to a hypochondriacal or even melancholy mood, with great irritability of temper. This is usually accompanied by insomnia. The intelligence is not especially affected, though occasionally it is weakened. Vertigo or attacks of fainting, with or without convulsions, form one of the most frequent symptoms, and often a tremor, increased by excitement, is noticed. To these symptoms disturbances of motion and sensation are often added. The movements are hampered because they cause pain, but besides there is really a paresis, which rarely, however, amounts to paralysis. . . . This may be in one or more limbs, but it is never limited to the muscles supplied by one nerve, and it has characteristics which distinguish it from those forms due to lesion of the spinal cord and brain. Abnormal spastic rigidity of the muscles is frequently found, differing markedly from the contracture of organic disease. The tendon reflexes are increased, and are never absent. There is rarely atrophy in the affected limb. The cranial nerves are never completely paralyzed. Speech is impeded rather than impaired. The sensory disturbances differ in their distribution from those due to any organic affection of the nerves or central organs, and they are usually accompanied by a limitation of the visual field. Œdema is the form of vaso-motor affection most frequently observed. The function of the bladder is rarely affected, but sexual power is usually impaired. An abnormal irritability of the cardiac action is a constant symptom of traumatic neurosis, but actual serious cardiac disease is not produced."

This concise picture of the disease is followed by a minute analysis of the different symptoms, and by a discussion of the theory of the affection. The author holds that the emotional shock is responsible for the symptoms, which would not appear did not a changed and diseased mind react abnormally to slight bodily disturbances. The fact that exactly similar symptoms can be produced by suggestion in persons who are

hypnotized, as has been shown by Charcot, is cited in proof of the psychical origin of the disease.

The persistency of the psychical alteration distinguishes the disease from hysteria, for the great variability of the symptoms characteristic of the latter is not observed. Patients rarely die of the affection, but they seldom recover wholly, according to the author's experience, for in a majority of his cases a condition of nervous irritability has remained after the severer symptoms have subsided. He has seen serious forms of mental derangement ensue. The recovery of some such patients, after they have secured substantial pecuniary compensation from corporations, is ascribed by him to the influence of the mental and emotional influences consequent upon successful litigation; but he has seen many cases in which this result has not been followed by recovery. He makes no new suggestions regarding treatment, which, according to his view of the affection, must be chiefly psychical. The forensic aspects of the subject are briefly discussed in the final chapter.

M. A. S.

DIE VERBREITUNG DER TUBERKELBACILLEN AUSSERHALB DES KÖRPERS.

Von DR. GEORG CORNET, Prakt. Arzt in Berlin und Reichenhall. Separat.

Abdruck aus der *Zeitschrift für Hygiene*, 1888, v. 191-331.

THE DISSEMINATION OF TUBERCLE BACILLI OUTSIDE THE BODY. By GEORGE CORNET.

SINCE the publication in 1882 of the classical work of Koch upon the etiology of tuberculosis, the tubercle bacillus has come to be universally acknowledged as the cause of the disease. Any complete study of the manner in which the disease is communicated must therefore include the investigation of the occurrence of this specific microorganism outside the body. Such an investigation has been made by Cornet, and as the result of his elaborate research much valuable knowledge has been acquired, which should be of great use in the prophylaxis of the disease.

Because of the vast preponderance of pulmonary tuberculosis over disease due to the same cause in other parts of the body, Cornet is compelled to consider the air to be the common carrier of the infectious material, and has accordingly directed his experiments to the determination of the distribution of the bacillus in the air.

Following out the method of air analysis suggested by von Esmarch, he has collected the dust from the walls of rooms in which phthisical patients were living—avoiding carefully such portions of the wall as might be soiled by sputum from the patient—and has inoculated it into the peritoneal cavity of guinea-pigs. It would carry us too far to go into the details of his experiments, suffice it to say that they were conducted with every precaution against error in the results from any source. The dust examined in each case represented the settleings from 51,000 litres of air—the amount which a person would breathe in four days, supposing, with Vierordt, 500 c. c. to enter the lungs with each inspiration.

The results obtained by Cornet are in hopeful opposition to the idea

so prevalent that tubercle bacilli must of necessity be everywhere present in the air, for of 147 places examined, only 40 (27 per cent.) were shown to contain the bacilli, and of 392 animals inoculated, only 59 (15 per cent.) became tuberculous.

Since it has been proven that tubercle bacilli cannot multiply under ordinary conditions outside the body, we are forced to believe that all those found in the air must have come from some animal organism affected with tuberculosis. It is of the greatest importance to us to know how this infection of the air occurs. Long ago Nægeli proved that microorganisms are incapable of passing from liquid media into the air, and later investigators have shown that the air expired by phthisical patients is free from tubercle bacilli. Cornet, therefore, concludes that the sputum is the usual source of infection of the air; and that, so long as the sputum remains moist, no bacilli can leave it—in other words, that only dried sputum is dangerous. The results of the examination of dust from the air in the sleeping rooms of fifty-three tuberculous private patients furnished interesting corroboration of this theory, for in every one of the twenty cases in which bacilli were detected in the dust the patient admitted spitting upon the floor or into the handkerchief, proceedings, either of which would readily admit of the drying of the sputum. In twenty-eight cases, on the other hand, in which none of the animals inoculated became tuberculous the patients (with three exceptions) denied ever using anything but a spit-cup.

But if the tubercle bacilli enter the air in particles of dried sputum, should not city streets be a fertile source of the dissemination of the germ? A negative reply to this question is based upon the fact that of forty-one animals inoculated with material obtained from streets and public buildings (exclusive of hospitals, etc.) in Berlin, not one became tuberculous. Furthermore, an investigation of the proportion of phthisical persons among the street-cleaners of Berlin showed a smaller percentage of them to be affected with that disease than of any other class obliged to work much in dusty places.

The air of hospital wards, asylums, and prisons was also examined. A comparison of the results obtained in the medical and surgical wards is of considerable interest. Of 91 animals inoculated from the dust of 21 medical wards, 77 were affected with some infectious disease—in 15 cases with tuberculosis. On the other hand, of 8 animals inoculated from the dust of surgical wards, only 1 died, and that one not of tuberculosis. It is reasonable to suppose that to the careful asepsis employed in the Berlin surgical wards is owing their freedom from infectious germs, and Cornet concludes that very simple means may be sufficient to control the contamination of the air by tubercle bacilli.

Appreciating the difficulties attendant upon efforts to introduce any but simple and inexpensive measures of prophylaxis, Cornet wisely limits his suggestions to such as may be easily carried out by everyone. Of paramount importance is the habitual employment of some form of receptacle for the expectoration, in which it shall be prevented from drying by the presence of some liquid. For this purpose water is thought to answer as well as disinfectant solutions, as the latter do not penetrate the mucus. Such receptacles should be numerous so that one may always be at hand, and should be thoroughly cleansed at least once daily. Spitting upon the floor should be prohibited. The use of the handkerchief as a receptacle for sputum should be limited as much as

possible. The soiled garments of phthisical persons should be thoroughly boiled for an hour in the process of washing. Careful disinfection of the rooms in which tubercular persons have died, as well as of the beds and bedding, should be required. Frequent watering of streets in dry weather is of considerable importance. Finally, the patient should be made to understand that unless he take the necessary precautions he is liable to be a source of infection to himself as well as to all around him.

Cornet is inclined to renounce all belief in hereditary tendency to tuberculosis, believing that the more frequent occurrence of the disease in members of the same family is adequately explained by a consideration of the increased liability to infection. He furthermore suggests, that were there a marked hereditary predisposition the percentage of deaths from tuberculosis would be greatest in early and middle life, whereas in reality it increases regularly with advancing age.

The article is most carefully written and deserves the thoughtful consideration of everyone interested in the eradication of the disease which is accountable for about one-seventh of our mortality. J. S. E.

INEBRIETY: ITS ETIOLOGY, PATHOLOGY, TREATMENT, AND JURISPRUDENCE.

By NORMAN KERR, M.D., F.L.S., etc. 8vo. pp. xxx., 415. London: H. K. Lewis. Philadelphia: P. Blakiston, Son & Co., 1888.

DR. KERR, who is the President of the British Society for the Study of Inebriety, and consulting physician to the Dalrymple Home for Inebriates, has written this work to impart useful knowledge as to "medicinal remedies, the selection of a suitable home, or some other detail of therapeutic treatment." The work is intended to meet the "innumerable inquiries which have been addressed to me as to the best course to be adopted in dealing with the inebriate."

The subject of inebriety, both from a social as well as from a medical standpoint, is a many-sided one. Problems are presented which have vexed the minds of moralists and lawmakers from time immemorial, and the medical profession has not escaped its share of labor in the endeavor to solve them. If we read the signs of the times aright, it may be expected to assume in the future more and more of the burden.

The book of Dr. Kerr will be read with interest by those who are seeking light, but we fear that it will not much enlighten us upon the intricate questions involved. These questions, however, are of much importance, and Dr. Kerr's work deserves perusal, as does every honest attempt of a like nature.

The profession, as well as the laity, may be divided into two classes:

1st. Those who regard inebriety as a *vice*, and only admit that it becomes a disease when long indulgence in the habit has undermined the physical organism and taken away the nervous and mental force necessary to resistance.

2d. Those who look upon the inebriate as the victim of a disease over which he, unaided, has little power, and for which he is in but small measure, if at all, responsible.

Dr. Kerr belongs to the second class.

Dr. Kerr's readers will, unless we have carelessly read his work, find it difficult to decide as to how much weight he gives to habit in the production of inebriety. Our inference is that, while he accords to it its due weight of influence in binding more firmly the fetters upon the inebriate, he does not regard periodic intoxication, or even habitual inebriety, as anything more than a symptom of an inherent weakness, either the result of direct heredity, an impaired nervous organism, or the one fatal weakness in an otherwise normal physical and mental constitution.

In defence of his thesis, the author proposes to examine the claims of inebriety to be classed as a disease, by the test of Sir Thomas Watson's definition of disease, viz., all deviations from healthy standard; but, however much one may or may not differ with Dr. Kerr, the feeling is forced upon us that he does not prove his case.

The problem, as we conceive it, is simply this: Given a condition characterized by habitual or periodic excessive use of intoxicants, with the well-known and direful results, is there a disease which produces an irresistible impulse thus to indulge, which disease exists *de novo*, and is not the result of prolonged habit? From this problem would, of course, be excluded all those forms of insanity, of which a departure more or less abrupt from former temperate habits is one of the complications.

We are willing to admit with Dr. Kerr that, in addition to these insane cases above referred to, there exists a certain number of other cases in whom there is such an impairment of the nervous system, either congenital, in some instances directly hereditary, or the result of ill health or overwork, or some other of the ills and accidents of life, as to destroy or weaken the normal restraining power, call it defective inhibition, or what he may, rendering its victims prone to excessive indulgence in narcotic intoxication and to habit diseases.

Admitting this much, we must protest against what seems to us an unnecessary and ill-directed anxiety to set up the disease inebriety, and include, with a few exceptions, all drunkards within the category. Dr. Kerr does not believe that all drunkards have the disease, but his exceptions, as we understand them, are few. He does include all cases in which there is a "departure from health," keeping Watson's definition in view, "in the form of some obscure condition of the nervous system which craves for the temporary relief afforded by some stimulant or narcotic."

Passing from the obscure and functional, he endeavors to apply the test of pathology to the claims of inebriety to be ranked as a disease. In doing this he makes the error, resulting apparently from his anxiety to prove his case, of confounding cause with effect.

The "typical series of pathological appearances" which he "almost always found," as detailed on page 8, are those of the recognized effects of alcohol upon the animal economy, but surely no one but an enthusiast would ask us to accept as proof of the existence of a disease, which impelled a man to take poison, the *post-mortem* evidences that he had taken poison.

In the matter of treatment we are more in accord with Dr. Kerr than upon any other. He believes in removing the alcohol or other narcotic at once. While this is not always wise, we think that in the majority of instances it can be done with as little disturbance as is produced by the

so-called tapering-down process. Tonics, good food, exercise, mental and physical occupation, moral support, comprise, in brief, what he suggests in the way of direct therapeutics.

The medico-legal status of the inebriate, especially in the line of responsibility, is attracting more and more attention, and we regret that Dr. Kerr takes the stand that he does, though, to do him justice, it is in accord with the general position which he has assumed upon the subject of inebriety. It is becoming too common to defend criminals upon the theory of irresponsibility by reason of inebriety.

Dr. Kerr would hold the inebriate to a limited responsibility, or excuse him wholly, like the lunatic, from consequences of his acts. If he were to stop here, while we could not follow, we would not so heartily condemn. But he goes beyond this and opens the door of irresponsibility so wide that there seems no limit to those who may enter, when he says of certain cases "they were the subjects of inebriety though they never committed an inebriate act."

Dr. Kerr's book is written for popular as well as professional reading. What encouragement he here gives to criminals. All they need do is to take a glass or two of whiskey, commit almost any crime, and demand excuse on account of hitherto unsuspected and undemonstrated inebriety, what Dr. Kerr calls a pre-paroxysmal pathological antecedent, whatever that may mean.

'Gainst such theories we can only exclaim with Shakespeare:

"This is an excellent foppery of the world that when we are sick in fortune (often the surfeit of our own behavior), we make guilty of our disasters the sun, the moon, and the stars; as if we were villains by necessity; fools by heavenly compulsion; knaves, thieves, and treachers by spherical predominance; drunkards, liars, and adulterers by enforced obedience of planetary influence, and all that we are evil in, by a divine thrusting on."

E. N. B.

THE DIAGNOSIS AND TREATMENT OF DISEASES OF THE RECTUM. By WILLIAM ALLINGHAM, Fellow of the Royal College of Surgeons of England, Senior Surgeon to St. Mark's Hospital, etc. EDITED AND REVISED WITH MUCH ADDITIONAL NEW MATTER AND NUMEROUS DIAGRAMs by HERBERT WM. ALLINGHAM, F.R.C.S., Surgeon to the Great Northern Hospital, Demonstrator of Anatomy at St. George's Hospital, etc. 8vo., pp. xvi., 366. London: J. & A. Churchill, 1888.

To say that a man has written the best book upon any given subject is high praise, yet we believe it can be honestly said of this work which now appeals to the judgment of the professional public in a fifth edition. Its author has transferred to his son the duty of revising and editing the present edition, and the result is seen in a large volume containing many valuable additions. Mr. Herbert Allingham has furnished some new diagrams which help to make plain certain of the pathological conditions involved, and some of the operative procedures needed for

their remedying. Other distinct additions by the same hand consist of chapters on "Inguinal and Lumbar Colotomy," "Excision of the Rectum," and "Incontinence of Feces."

Mr. H. Allingham is emphatic in his preference for inguinal over lumbar colotomy, as he thinks it is easier to find the large gut in the former locality, and to obtain a good spur to prevent the passage of feces into the rectum, while the artificial anus is more easily attended to and kept clean when placed in the inguinal region. He points to the fact that the peritoneum is often injured during the lumbar operation, either consciously or unconsciously, and that when this is the case one of the prime arguments for colotomy in the loin is disposed of. Then, opening the peritoneum has been robbed of many of its terrors by the steady progress of modern surgery, so that, unless there is a call for immediate evacuation of the bowels without waiting for the peritoneum to become united to the abdominal wall, Mr. Allingham, with an experience of sixty-four lumbar colotomies done by himself, gives a decided preference to the inguinal operation.

We have casually mentioned one of the chief factors which give value to this book, namely, the vast experience to which its authors can appeal. Certainly the man who has done sixty-four lumbar colotomies knows a good deal about the advantages and disadvantages of that operation, and his opinion properly should have much weight. Indeed, no surgeon liable to be called upon to perform either of these operations can afford to neglect the practical hints with which these chapters abound.

In the chapter upon incontinence of feces following division of the sphincter, Mr. Allingham records the very favorable experience he and his father have had in the use of the actual cautery, Paquelin's knife, in securing contraction of the anus and improving the tone of the sphincter muscles.

While acknowledging the caution with which he, in common with most English and American surgeons, for a long time regarded excision of the rectum, the editor says he has himself removed the whole circumference of the rectum in forty-two cases, while he has removed segments of the bowel in very many patients. His method of operating is to obtain room and good drainage by a deep posterior incision as recommended by Verneuil, and to begin the excision of the rectum proper between the external and internal sphincters, leaving the former attached to the skin. In view of the impossibility of keeping the bowels long confined, and the inevitable flooding of the wound by their contents, our author places all his reliance upon drainage and thorough cleanliness, rather than upon any antiseptic specific. He narrates ten cases from his own experience, and exhibits in the details that practical common sense, founded upon extensive acquaintance with rectal disease, which the profession has learned to connect with the senior surgeon of St. Mark's Hospital, and which seems to be handed down unimpaired to the son.

What we said at the beginning we would repeat at the close of this notice. The book has long been the best one upon rectal surgery, and this edition is a decided improvement upon those which have preceded it.

S. A.

PROGRESS. OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

FRANCIS H. WILLIAMS, M.D.,

ASSISTANT PROFESSOR OF THERAPEUTICS IN HARVARD UNIVERSITY.

SULPHONAL.

DR. WILLIAM H. FLINT reports thirty-three cases in which sulphonal has been employed and in which the observations have evidently been made with unusual care.

The drug was given at bedtime, in powder inclosed in capsules and the patients were not informed of the nature of the drug or of its expected action. The average length of time at which sleep ensued after the administration of the sulphonal was about an hour. The average duration of sleep was a little over six hours, and success attended its use in about eighty-two per cent. of all the trials. The cases were unselected and many were unsuitable for experiment with a pure hypnotic.

While the cases reported are too few to justify any generalizations regarding the exact indications and effects of sulphonal, they yet offer some interesting corroborative evidence regarding its great hypnotic value, already established by earlier observations. The general conclusion which may be drawn from the observations is, that sulphonal, even in single doses of twenty to thirty grains, is a safe, and, in the main, reliable hypnotic, free from unpleasant concomitant effects, and usually from all undesirable sequelæ.

The single objectionable after-effect observed was moderate somnolence on the morning following the administration of the remedy. In none of the cases has there been the slightest derangement of appetite or digestion, nor have the circulation and respiration been appreciably affected at the time of waking. The cutaneous and renal secretions were neither increased nor diminished; nausea, vomiting, and constipation have not followed the use of the drug. Several of the cases seem to show that an increase of the original dose is often not required, and that after a certain time, natural sleep being restored, the sulphonal may be discontinued. The doctrines that sulphonal is of exceptional value in insomnia occasioned by debility, neurasthenia, and mental perturbation, and that it has no appreciable anodyne properties,

receive support from the history of several of these cases. The effect of sulphonal was particularly fortunate in the cases of those patients who had previously been addicted to the use of opium and of other hypnotic drugs, or were suffering from insomnia due to the withdrawal of these remedies.—*New York Medical Journal*, Dec. 15, 1888.

The Superintendent of the Richmond Asylum, Dublin District, MR. CONOLLY NORMAN, has used sulphonal in about thirty cases, of which he reports twenty-two. In only two persons were any bad results noticed; these were especially unfavorable cases and where other sedatives had failed. No gastric or intestinal trouble was observed. The drug appeared to lessen the tendency to self-abuse and erotic excitement. In some recurrent cases it appeared to shorten the attack.

In comparing sulphonal with other medicines having similar effects, it is needless to refer to the products of opium or to chloral. Of the more modern drugs, paraldehyde is, perhaps, the most used. Its great disadvantage is that it requires constant increase in the dose. This does not seem to apply to sulphonal. Paraldehyde long continued is also stated by Fröhner to cause destructive changes in the blood corpuscles, while Kraft-Ebing points out that it occasionally produces symptoms resembling alcoholism. Urethan, of which pretty extensive trial was made, is uncertain and of no great strength.

Amylhydrate is uncertain and dangerous, as Schlös's cases prove (*Jahrbuch der Psych.*, viii. 1 and 2). Methylal is liable to the same reproaches. Amylhydrate, methylal, and hypnone are so abominable in taste and smell, that it is impossible to get patients to swallow them, and they all upset the stomach.

The advantages of sulphonal are: that it has no odor, is almost tasteless, and produces no gastric derangement and no troublesome head symptoms. It does not affect the appetite and the sleep is relatively "natural." Its disadvantages are its bulk and insolubility; its action is slow. Other observers have noticed a slight degree of giddiness and unsteadiness, with a sense of weariness on the following morning. Vomiting and slight diarrhoea soon passed off, though the drug was continued.

Probably unpleasant and even injurious results will be found to occur after the injudicious or continued use of sulphonal.—*Dublin Journal of Medical Science*, Jan. 1889.

POISONING BY SULPHONAL.

In the *Deutsche Medicinal Zeitung* of Nov. 26th, DR. BORNEMANN gives an account of the case of a physician, fifty-three years old, a victim to the morphine habit, to whom sulphonal was given. On one occasion sixty grains were given shortly after nine o'clock in the evening and thirty grains more an hour after midnight. Sleep did not follow promptly, but the patient shortly showed symptoms of muscular incoordination of a decided character. It took six days for the ataxia to subside entirely, and during a portion of that time there was great mental depression.—*New York Medical Journal*, Dec. 29, 1888.

JUNIPER BERRIES AS A DIURETIC.

The inspissated recent juice of common juniper berries is highly praised by DR. GOLDSCHMID, and it is recommended by PROF. VOGEL, of Dorpat,

as the best diuretic for children. While being most effective, the remedy is exceedingly mild and altogether free from any unpleasant accessory effect. Two or three teaspoonfuls should be given daily, diluted with water and sweetened with sugar. Young patients take it very readily.—*British Medical Journal*, Jan. 12, 1889.

COCOANUT AS A VERMIFUGE.

PROFESSOR PARESI, of Athens, when he was in Abyssinia happened to discover that ordinary cocoanut possesses vermifuge qualities in a high degree. He took, one day, a quantity of the juice and pulp and shortly afterward felt some amount of gastric disturbance, which, however, passed off in a few hours. Subsequently he had diarrhœa and was surprised to find in the motion a complete tænia, head and all, quite dead.

After returning to Athens, Professor Paresi made a number of observations which were most satisfactory, the tænia being always passed and quite dead. In only one case was the head wanting. He orders the milk and the pulp of one cocoanut to be taken early in the morning fasting, no purgative or confinement to the house being required.—*Lancet*, August, 1888.

A correspondent of the *Times*, of India, writes that the cocoanut has been used as a vermifuge in India for probably forty generations by the beef-eaters of the country, and is so well known there as a means of expelling the flat worm, that he cannot conceive how information of the fact has not reached England before. When properly prepared and intelligently administered, so says the writer, the cocoanut is equally efficacious with male fern oil, koussou, pomegranate root, or turpentine, while it is as pleasant to the palate as they are offensive.—*Pharmaceutical Journal and Transactions*, Nov. 3, 1888.

THERAPEUTIC AGENTS IN SHOCK.

PROFESSOR CHEEVER published in the *Boston Medical and Surgical Journal*, vol. cxix. p. 293, for 1888, an excellent paper on shock, which, although most terse and clear, is too long to be reproduced here.

Among the ways of preventing it, he insists that the mental shock should be calmed by a cheerful word and personal presence. The anæsthesia should be of short duration; it should not be begun until everything is ready, and it should be discontinued early, keeping in mind the fact that consciousness returns tardily. The operation and the dressing should occupy no more time than is necessary. Throughout all care should be taken that the patient is not chilled. To promote the reaction after the operation, persistent and carefully applied dry heat should be employed, with especial care to avoid accidental burns. Liquid nourishment, with a stimulant and a little laudanum by enema; aromatic spirits of ammonia, black coffee, and brandy by the mouth, quiet, and a horizontal or more than horizontal position and sleep are also serviceable.

In commenting upon Professor Cheever's article, *The Therapeutic Gazette* of Dec. 13, 1888, suggests that the physiology of this condition is failure of the circulation, as shown by the great loss in force of the pulse, diminished arterial pressure, and extraordinary fall of the bodily temperature. Further, that vaso-motor paralysis is the chief cause of heart failure and of the above con-

ditions. Upon this theory the two chief indications for the treatment of shock are to overcome the vaso-motor paralysis and to maintain the bodily heat. Stimulation of the heart is, of course, useful, but such stimulation will amount to very little if there be no reawakening of the resistance to the heart's action; and if such resistance be aroused in any individual case, it is almost certain that it in turn will reëxcite the heart.

As regards nourishment in severe shock, when the life-force is at such a low ebb that respiration and circulation can scarcely be maintained, digestion must be in great part, if not altogether, arrested. Certain substances which are stimulants rather than foods, as beef essence, highly seasoned and given hot might very well achieve good, in an injured person, at a time when even as simple a food as milk would not be helpful, but be actually injurious.

The ordinary methods of raising the bodily temperature by bottles of hot water, hot bricks, etc., placed in the bed are feeble, compared with a hot-water bath. In hospital cases the very best treatment of shock following an injury may even be to put the patient for a time in a bath of water whose temperature is 110° F. Another method of keeping up the bodily temperature, which is free from the objections of hot water and is almost as powerful as that procedure, is the use of the hot-water bed. If an ordinary water-bed be three-fourths filled with water whose temperature is 130° to 140° and blankets spread over it and the patient laid thereon, the body will sink down so that it will be almost surrounded by the heated mass. If the bed be well covered with blankets, many hours will be required for the cooling of the water.

The choice of anæsthetics is a matter of great importance. Ether is as truly a stimulant to the circulation as is alcohol, and merely for the purpose of stimulating a patient in shock it is more rational to give ether than to give alcohol, because the action of the ether is quick and more controllable than is the action of alcohol; on the other hand, precisely as alcohol in excess becomes depressant to the heart and circulation, so also does ether; chloroform, however, is, under all circumstances, a depressant.

As regards the use of alcohol in the cardiac accidents of anæsthesia, it should not be forgotten that ether and alcohol have almost the same action, save only that ether is absorbent and eliminated with greater rapidity. When the circulation fails during anæsthesia, it is just as sensible to exhibit more ether as to exhibit alcohol.

In atropine we have a drug which will stimulate the vaso-motor system; the dose of its salts is small and their diffusibility is great when injected hypodermatically. Ergot is also a powerful vaso-motor stimulant; its action, when given by the mouth, is too slow for the necessities of such cases, and its hypodermatic injection is prone to cause severe local irritation. Digitalis is strongly indicated in shock, not only on account of its power over the heart, but because it appears to be a powerful stimulant to the vaso-motor system. In the form of the tincture it may be given hypodermatically with little danger of producing severe local irritation, and with the hope that it may be sufficiently quick in its influence to be of some good; but its action is exceedingly slow compared with the almost instantaneous activity of atropine. Ammonia administered by the mouth may sometimes be of service; injected into a vein it would have an immediate but temporary effect.

[Atropine might also be used to avoid shock by giving it at the beginning

of anæsthesia, thereby dulling the vagus, and thus to some extent shielding the heart from shock transmitted through the nerve, as well as to produce the good effect of the atropine upon the vaso-motor system. Some preparation of strophanthus might be used instead of the tincture of digitalis, as it would probably be more prompt in its action.—ED.]

CREOLIN.

Among some of the drawbacks of this new antiseptic are that its mixtures with water are not transparent, and as a consequence the surgeon is not able to find readily the desired instrument among a number covered by the solution. It also makes everything slippery, as if covered with soap, and less easy to hold firmly.—*Therapeutische Monatshefte*, Jan. 1889.

TINCTURE OF STROPHANTHUS.

DR. HERMANN HAAS has made a careful study of the action of tincture of strophanthus upon the visible, tactile, and graphic cardiac impulse. Fraser's tincture was used in doses of ten to thirty, or even up to fifty drops. No dangerous symptoms or cumulative action appeared, the appetite improved under its administration, which is in contrast to digitalis in many cases.

With other observers, he found the pulse slowed, and the patients improved under its use. As a diuretic it was successful in cases in which digitalis had been without avail. In order to observe the effect of strophanthus on the cardiac impulse only, three patients were used who showed a cardiac impulse which could be recognized by the eye and hand, when the patient was lying down; care was taken to observe the effect of a sitting posture or standing upon the cardiac impulse; curves of both the cardiac impulse and the respiration were taken at the same time.

Before giving any dose it was necessary to study carefully the cardiograms characteristic of that individual. After this had been done, thirty to seventy drops of tincture of strophanthus were given, distributed over one or two days; curves were then taken for several successive days. After the effect of the new drug had passed off, it was repeated, and after a sufficient number of observations had been taken, and an interval allowed, digitalis was given, and the cardiograms of the two drugs were compared.

The results of the observations in all of the above (more than twenty cases) were very similar.

It seems that five hours after the administration of tincture of strophanthus the character of the apex beat changes, it becomes ten to twenty beats slower per minute; the heart beat is quieter, and the impulse is weaker.

The softening of the blow in the intercostal spaces is noticeable both to eye and finger, as well as to the open hand applied to the chest.

In all cases in which there was not considerable hypertrophy of the heart, its lessened activity rapidly went so far that the point of cardiac pulsation was found only with difficulty, or not at all. This action was observed in all cases for a longer or shorter time, according to the dose or the amount of hypertrophy.

Dr. Haas considers the action of strophanthus to be one which diminishes

the activity of the heart's muscle, as well as of the muscular layer of the bloodvessels; an action, in other words, not similar to that of digitalis, but directly the opposite. He thinks it doubtful, in the light of his observations, if strophanthus increases the blood-pressure, notwithstanding Fraser's observations showing that the heart's muscle is stimulated to make stronger contractions under the influence of this drug.—*Deutsches Archiv für klinische Medicin*, vol. xliii. p. 353.

THE THERAPEUTICAL EMPLOYMENT OF IODOL IN INTERNAL DISEASES.

DANTE CERVESATO (*Lo Sperimentale*, Sept. 1888, quoted by *Wien. med. Presse*, 1888, No. 49) gave iodol internally, in doses of seven to twenty grains a day, to children with different evidences of scrofulosis. It proved itself valuable chiefly in the torpid forms, as in chronic swellings, and in glands not yet suppurating. Its action was also favorable, though to a less extent, in scrofulous affections of the mucous membranes, especially in rhinitis and otitis. In scrofulous disorders of the skin it was of little service. In addition to the internal administration of the drug, insufflations of it or inunctions with an ointment were employed. In diseases of the respiratory apparatus iodol was given in doses of fifteen to forty-five grains a day. Inhalations were also prescribed, the drug being suspended in glycerine, alcohol, and water. In this way excellent results were obtained in different forms of laryngitis and bronchitis. In syphilitic ulceration of the pharynx, the result was also excellent, the treatment being aided by local applications of iodol.

MEDICINE.

UNDER THE CHARGE OF

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THE THERAPEUTICS OF TYPHOID FEVER.

A. VOGL (*Deutsch. med. Wochenschr.*, 1888, Nos. 48, 49) dismisses in a few words the use of the chemical antipyretics as being productive of harm, and discusses at length the employment of cold baths. After quoting very extensively from the literature of the subject, he concludes that though the antipyretic effect of a single bath is not so striking as that of a full dose of antipyrin, yet it is by no means inconsiderable, if properly applied, and the right time for its administration is chosen. It is, however, from the frequently repeated employment of baths, in the manner insisted on by Brand, that the

best results are obtained. As often as the temperature reaches 39° C., baths of 14° R., lasting one-quarter of an hour, should be given every two hours, day and night. It is not a decided fall of temperature which is to be desired, but a diminution of the *average* daily temperature. The author does not believe that any danger attends the employment of the cold bath system, since but very few unfavorable results have been reported out of the many thousand baths which have been administered to fever patients in France and Germany. The attendants should not be allowed to remove the patient from the bath before the fifteen minutes have expired, for any less important symptoms than blueness of the face, marked pallor, or decided dyspnœa. However, as with the first dose of any antipyretic drug, the first bath must be given with some degree of caution. He claims that the mortality is decidedly less under the cold bath treatment than when other methods are applied, or a purely expectant plan is pursued. The importance cannot be sufficiently urged of commencing the treatment as early in the case as possible; even before the diagnosis is positively established. Cold baths not only diminish the temperature, but favorably influence the arterial tone, the activity of the heart, digestion, respiration, diuresis, and the functions of the skin.

THE TREATMENT OF TYPHOID FEVER WITH ACETANILID.

In a somewhat lengthy article in the *Prager medicinische Wochenschrift*, Nos. 34, 35, 36, and 37, 1888, HAAS reports the results of the administration of acetanilid to 104 cases of typhoid fever; giving statistics of the symptoms present and the effects of the drug observed. He concludes that acetanilid, neither in large nor in small doses, exerts any specific or abortive action on the disease, but that it is an excellent remedy for the treatment of certain symptoms. Its action on the high temperature and on the nervous symptoms accompanying it is very satisfactory and certain. For this purpose more than one gramme a day is seldom needed. It does not disturb digestion, has a favorable influence on the general nutrition, and increases the appetite. Cyanosis and oligocythæmia are symptoms attending only the imprudent use of large doses. Collapse and rigors will be avoided, if no effort be made to produce very marked reduction of temperature, and doses as small as will answer the purpose be employed. When, however, there is dangerous hyperpyrexia, two grammes a day may be given, and will, without fail, reduce the body heat. Such doses must be given with caution, or collapse and rigors may ensue.

The treatment with acetanilid should be commenced as early as possible in the disease, and one gramme given within ten hours in divided doses, since to administer it at night is useless. The greater the difference between the morning and evening temperature, the more should the amount be diminished. From the day on which the evening temperature reaches normal under the influence of the drug, the daily dose should be reduced to one-half gramme. Finally, the evening temperature is kept at normal by this amount, and in advanced cases by even three-tenths of a gramme. Chilliness followed by sweating indicates the need of caution in the size of the dose. The author believes that under this method the patients assimilate food better, and may be fed more freely, and that they lose less weight and become more able to

resist the injurious action of the fever. He considers this method of treatment fully equal to that with cold baths, while it is far less burdensome both to the patient and to the attendants. The only contraindications are the presence of such conditions as intestinal hemorrhage, perforation, and severe pulmonary complications, which demand a special and symptomatic treatment. In cardiac weakness and collapse the use of acetanilid is in order, combined with suitable stimulating methods.

TREATMENT OF TYPHOID FEVER WITH COLD BATHS.

JUHEL-RÉNOY (*L'Union Méd.*, January 5, 1889, 32) reports his experience with the cold water treatment of typhoid fever, after the method of Brand, having now employed it in many cases. He concludes that the cold bath not only operates against the elevation of temperature, but against the force of the disease; that the arguments against the danger from it ought to be abandoned; that the mortality is much reduced by this form of treatment, and that the application of the method should be commenced as soon as possible after the disease appears.

TYPHOID FEVER COMPLICATED BY ANTHRAX.

J. KARLINSKI (*Berlin. klin. Wochenschr.*, 1888, Nos. 43, 44) reports in detail an interesting case of typhoid fever complicated by anthrax, and describes the bacteriological experiments which he instituted. The patient exhibited evident symptoms of severe typhoid fever, and the disease ran a somewhat atypical course until the twenty-first day. At this date there was a rise in temperature, and on the day following the author discovered in the liquid stools some small masses tinged with blood, which contained, besides other constituents, numerous bacilli of about nine micromillimetres in length. Cultures of these and experiments on animals with them convinced him that he had to do with the bacillus of anthrax. In the meantime the patient grew worse and died. The autopsy revealed the characteristic changes of typhoid fever in the lower part of the intestine, while in the stomach, duodenum, and upper part of the jejunum, there were swollen, infiltrated, deeply red regions, forming bean-like elevations. Microscopic examination of these and of the mesenteric glands in the vicinity revealed great numbers of anthrax bacilli. In the lower part of the ileum and cæcum, on the other hand, as well as in the mesenteric glands of that region, no bacilli were to be found, but there were discovered some of the characteristic groups of the typhoid bacilli.

The case was, therefore, one of mixed infection. As there had been no symptoms of anything but typhoid fever until the twenty-first day, the author was at a loss to account for the source of the infection with anthrax. He discovered, however, that a few days before the change in the symptoms had been noticed the sister of the patient had brought him some milk, and that the cow from which this had been derived had since died, having had a suppurating sore upon its udder. It would seem clear that this had been a local manifestation of anthrax, and that spores had in all probability entered the milk.

PROPHYLAXIS IN SCARLATINA.

BÆUMLER (*Münch. med. Wochenschr.*, 1888, No. 42, 703) gives some statistics showing the high rate of mortality from scarlet fever, and reviews the complications which may occur. Prominent among these is albuminuria, to which he calls especial attention. A careful distinction is to be drawn between the albuminuria frequently occurring early in the disease, accompanying high fever, and lasting but a few days, and that developing at the third or fourth week, which is often very persistent and may be attended by all the evidences of a severe nephritis, though the amount of albumin be small in amount. Regarding the prophylaxis against scarlatina, the two questions arise—whether this is possible, and whether it is necessary. Though this disease is so much more dangerous than measles, the disposition to get it is very much less. Only in a few of the early years of childhood is there a really considerable tendency to catch it from others, and this rapidly grows less with advancing age. An important point, therefore, is that the longer the child can be protected from the disease, the greater is the likelihood that it will escape it entirely.

As is well known, the contagium of scarlatina is always derived from some other case; it possesses a very great vitality; it is active from the earliest beginning of the disease until far into convalescence; and it usually requires a very short period for its incubation. The author reports cases to show that the breath may carry the contagion before the appearance of any eruption, though the chief danger is during the stage of desquamation. It is therefore absolutely necessary to isolate patients as soon as possible. The clothes can be disinfected, but it is virtually impossible to disinfect the epithelial covering. A fixed time during which the patient must be isolated cannot, therefore, be named, but the child must remain away from others until the shedding of the epithelium, especially that of the palms and soles, is entirely completed. The author has known this to require sixty-three days from the onset of the disease, and a still larger number has been reported by others. Desquamation can perhaps be hastened by bathing with warm soap-water, and the dissemination of scales hindered by inunctions. It is very important that the scalp be treated in this way, as the scales of this part are fine and are shed early. A convalescent room is of especial value for those patients who feel well, but who cannot with safety mingle with others.

Children who have come in contact with cases of scarlatina should remain under observation ten or twelve days before again joining other children. Those in attendance upon the patients should wear some outside garment in the sick-room, and change their clothes and wash their hands in carbolic water on leaving it. The sick-room should be thoroughly aired every day, with proper precautions that the patient take no cold. All the linen used about the patient is, while still in the sick room, to be put in a three per cent. carbolic acid solution, and then boiled with a strong soap. Shoes are to be disinfected with the carbolic water, and clothes treated with steam. The walls of the sick-room, if painted or papered, are to be rubbed down with bread after the patient has been removed, the iron and wooden furniture and the floors washed with a carbolic solution, and the curtains, mattresses, etc., subjected to steam. Special vehicles should be employed to bring children

with scarlatina to hospitals. Finally, precaution should be observed against the carrying of the disease by third persons, domestic animals, books, letters, milk, etc.

THE PERIOD OF INFECTION IN SCARLET FEVER.

In connection with the preceding article, a communication of A. WHITLEGGE (*Lancet*, Jan. 5, 1889) is of interest. It seems to him probable that a lull in the infectiousness of the disease may occur about the end of the first week, at the time when the acute symptoms are subsiding and desquamation has hardly commenced. To determine this point, he analyzed 1700 cases, of which he had exact particulars, and found, in fact, that the infectiousness suddenly decreased at about the sixth day, and increased again about the twelfth day, reaching its maximum by the sixteenth day.

THE CAUSES OF DEATH AMONG GOUTY MEN.

E. CASEY (*Brit. Med. Journ.*, Jan. 19, 1889, 116) has made an analytical study of the cause of death of 2852 men, taken from the tables of the Collective Investigation Committee; 529 of these were gouty, 1870 free from the disease, and of the remainder no information was given upon this point. The presence or absence of intemperance was also studied. The results show that Bright's disease is closely related to the gouty diathesis, and is three times as frequent a cause of death among the gouty as among the not gouty. The influence of gout in the production of heart disease is marked at the middle period of life, but not in later years. Probably the gouty cases of heart disease run their course before old age is reached. Apoplexy shows the same tendency as Bright's disease and heart disease, but in a less degree. There appears to be no relation between gout and cirrhosis, and the same is true of malignant disease and of bronchitis. Pneumonia and allied diseases appear to be less common among the gouty, but more fatal among the intemperate. Phthisis is shown to be a considerably less common cause of death among subjects of gout. Either the gouty habit tends to prevent the development of phthisis, or conversely; or the causes of the two affections are in some degree antagonistic and mutually incompatible. Finally, the gouty habit offers no obstacle to the attainment of old age in the case of temperate men.

SYPHILITIC DISEASE OF THE CENTRAL NERVOUS SYSTEM RESEMBLING TABES.

H. OPPENHEIM (*Berl. klin. Wochenschr.*, 1888, No. 53, 1061) has, in the course of years, reached the conviction that syphilitic infection plays a not unimportant rôle in the production of tabes. In this case the syphilitic infection must produce two sorts of virus, one of which gives rise to the ordinary specific affections, the other to the simple degenerative processes of definite systems of fibres in the spinal cord. Not seldom, too, there occur cases in which it is difficult to determine whether tabes is present, or a genuine syphilitic disease of the central nervous system, since there appear to be no symptoms on which a positive differential diagnosis can be based. The author

relates a case which began with the evidences of cerebral syphilis, but later developed those of tabes.

Another case is reported in detail in which a genuine syphilitic affection of the cord was for years mistaken for true tabes. The patient, a woman of thirty-one years, who had certainly had syphilis, exhibited absent patellar reflexes, lancinating pains, disturbances of sensibility and of the function of the bladder, Romberg's symptom, ocular paralysis, immobility of the pupils and various bulbar symptoms characteristic of tabes. Treatment with mercurial inunction benefited the patient for a time, but later seemed to be useless, and the diagnosis of tabes was made. Later, the patellar reflex became exaggerated and there was ankle-clonus, so that the diagnosis of tabes was abandoned. The patient died of carcinoma of the uterus, and the autopsy revealed "pachymeningitis interna chronica et arachnitis gummosa," which surrounded the nerve roots, and sent processes into them and into the substance of the cord. The columns of Burdach were almost entirely free from disease, while the posterior nerve roots were atrophied from the pressure and infiltration of the surrounding newly formed tissue. The author describes in detail the microscopical changes throughout the cord and medulla, and discusses their relation to the symptoms observed during life. He claims that a case has not hitherto been reported in which a diffuse spinal affection produced such a complete exhibition of the symptoms of tabes dorsalis. He concludes, finally, that since a syphilitic spinal affection can produce such evidences of tabes, treatment with mercury should be undertaken in every case with such symptoms and in which there is a distinct specific history, and if the results are good, it would seem probable that we have had to do with a syphilitic pseudo-tabes. It is to be borne in mind that pure tabes is often made worse by the inunction cure.

THE LOCALIZATION OF TABES DORSALIS.

JENDRASSIK (*Deutsch. Arch. f. Clin. Med.*, 1888, B. 43, 543) discusses at length and with great care the various opinions which have been held regarding the cause of and the lesions of locomotor ataxia, reports two typical cases, the cords and brains of which he examined with care, brings forward numerous arguments in support of his belief in the cerebral origin of the disease, and concludes that his cases prove the existence of certain peculiar alterations in certain portions of the cerebral cortex; alike in histological character, but different in seat from those found in dementia paralytica. Further, that the recognition of these changes, combined with the deductions which must be drawn from the clinical symptoms of tabes, render it extremely probable that the greater part of tabetic symptoms are due to cortical disease, and that tabes, therefore, is not primarily an affection of the spinal cord but of the brain. The sclerosis of the posterior columns is to be considered as a degeneration secondary to the cerebral changes.

BUTYLCHLORAL IN TRIGEMINAL NEURALGIA.

LIEBREICH (*Ther. Monatsh.*, 1888, No. 11) has used butylchloral for facial pain due to rheumatism, injuries, inflammation of the dental pulp, etc. One-third gramme administered internally has the power of producing anæsthesia

in the region supplied by the trigeminal nerve, yet the freedom from pain does not last long, and a large dose acts as a hypnotic. As the medicine has a disagreeable taste, the author prescribes it in the following formula:

Butylchloral	2 to 5 parts.
Spir. vin. rectific.	10 "
Glycerini	20 "
Aq. destil.	120 parts.—M.

Sig.—Dose a tea-spoonful.

ERYTHROMELALGIA.

J. E. MORGAN (*Lancet*, Jan. 5, 1889, 10) describes five cases of erythromelalgia, under which name Mitchell designated a rare vaso-motor affection of the extremities, characterized by redness and pain. One of these patients was a man who had been obliged to stand for hours. After recovering from a severe and obstinate attack of gonorrhœa, he found the soles of his feet, especially the inner surface, very painful on walking; and if the effort to walk was persisted in, the feet would swell and assume a bluish-red color. He was unable to ride upon horseback, as the pressure of the stirrups gave rise to acute paroxysms of pain. As the disease grew worse he could neither stand nor walk with comfort, and used to relieve himself by crawling on the ground. There was no impairment of sensation or motion, no atrophy, no altered electrical conditions, no affection of the reflexes. On suspending the legs over the edge of the bed the feet almost immediately grew swollen, and later dusky red and painful. On returning to bed these symptoms soon passed off. There was, however, sometimes pain in the feet at night, produced by the warmth of the bedclothes. Various local and general remedies had been tried in vain, and some seemed to aggravate the symptoms, and as a last resort subcutaneous injections of morphia and atropia were given directly into the sole of the foot on the inner side. Improvement commenced at once, and on leaving the hospital, at the end of three months, the patient was able to walk with comparative comfort.

A second case is described, with symptoms much resembling those of the first, except that the disease later extended up the leg as far as the knee, the knee-jerk disappeared, and there was pain in the right arm and hand. Only a degree of relief was given by the treatment in this case.

In a third case the affection was confined to one foot.

A fourth patient had for twenty-three years suffered from pain in the sole of one foot. Warmth and exercise aggravated this and induced swelling and redness. In spite of all treatment the affection had always remained intractable. Whenever her health deteriorated the condition of the foot grew worse.

In still another patient the symptoms already described were confined almost entirely to one hand.

The author then discusses the symptoms, agreeing with Mitchell that the disease is a very intractable one. It can scarcely be considered a neuralgia, since the paroxysms of the latter affection are usually produced by cold and wet, and certainly not invariably by warm weather and warm clothing, as in the cases described. Then, too, the congestion which may occur in neuralgia is of an active type, accompanied by heat and a rose-red blush. In erythro-

melalgia, on the other hand, the congestion is rather of a passive character; often there is no increase of temperature, and the parts affected look rather livid than actually red. If the disorder is to be considered a neuritis, it is evidently of a form in which only certain parts of the nerve are involved, since even after it has lasted for years there develops no paralysis or diminution of muscular power. From the fact that syphilis, rheumatism, gonorrhœa, gout, or some form of fever had previously occurred in many of the cases of erythromelalgia which have been reported, the author thinks we are justified in attributing the paroxysms of pain to a perineuritis dependent on a cachectic taint, while the vaso-motor phenomena are due to a reflex irritation of the vaso-motor centres in the cord, starting from the affected nerves.

RHEUMATIC PNEUMONIA.

R. HIRSCH (*Berlin. klin. Wochenschr.*, 1888, No. 52, 1048) says that the proportion of cases of rheumatism in which pneumonia occurs as a complication is usually estimated at far too low a figure; the involvement of the lungs being often present but overlooked. Just as the disease may rapidly leave one joint and pass to another, so the rheumatic affection of the lungs may scarcely persist long enough to produce symptoms which attract attention to that region. There may be, perhaps, only a little temporary engorgement with blood. The author gives the details of a case in which there were at first the symptoms and physical signs of beginning pneumonia, which had entirely disappeared by the next day, but were supplanted by the evidences of rheumatic affection of various joints. He believes that this was an example, not of a mixed infection, but of the first symptoms of rheumatism exhibiting themselves in the lungs. That this may in fact be the case is rendered all the more probable when the connection between pneumonia on the one hand, and malaria, erysipelas, and typhoid fever on the other, is taken into account. It is well known, also, that the microörganism of pneumonia belongs by no means to a single species. The existence, too, of pneumonia lasting but a day or so has already been maintained by other writers, notably Leube, Weil, and Jürgensen.

PULMONARY TUBERCULOSIS CURED BY FACIAL ERYSIPELAS.

WAIBEL (*Münch. med. Wochenschr.*, No. 48, 1888, 841) relates the case of a patient with a very pronounced family history of tuberculosis, who had exhibited for about two months distinct evidences of beginning phthisis pulmonum. There had been fever, sweats, expectoration which was sometimes bloody, emaciation, dyspnœa, and progressive weakness. Physical examination revealed some depression and diminished expansion of the upper part of the right side, decided dulness on percussion, increased vocal resonance, and somewhat bronchial respiration, with a few râles. The left lung appeared to be normal. Examination of the sputum for bacilli was omitted, as the diagnosis was considered certain. During five weeks of observation the physical signs grew worse, the left side began to be involved, the amount of expectoration increased, and there was fever in the evenings. At this period the patient developed a severe attack of facial erysipelas, spreading over the whole head, and accompanied by rapid pulse, high fever, delirium, and great prostration,

so that a fatal termination seemed most probable. This condition lasted a week, or longer, and after recovery from the erysipelas there was a surprising change in the pulmonary symptoms. Fever and insomnia permanently disappeared, cough was but seldom heard, and a prodigious appetite developed. The sense of weakness persisted for some time, but at the end of four weeks the patient was able to walk to his home, situated at some distance, and soon could undertake light work. In three months he was perfectly strong, and able to undertake severe outdoor labor. Nearly a year after the first observation the author again examined his quondam patient, now a healthy and healthy-looking man, and found scarcely a trace of the former pulmonary lesions.

In discussing the case, the author can come to but one conclusion; namely, that the disease was certainly phthisis, and that the attack of erysipelas cured it; probably, he believes, because the continued high temperature was unsuited to the tubercle bacilli.

THE TREATMENT OF ROUND ULCER OF THE STOMACH.

P. CORNILS (*Deut. med. Wochenschr.*, 37, 755, 1888) gives an account of the course of gastric ulcer in his own person, and concludes from this and from his experience with other cases, that in many instances no drugs are needed, except purgatives to produce a daily evacuation, and that reliance is to be placed on dietetic treatment alone. With a diet which produces but little fecal matter, as with an exclusive milk diet, the daily opening of the bowels is not so necessary, but with a mixed diet this is imperative, in order to relieve thereby any congestion of the vessels of the stomach. For this purpose he took himself, and gave to others, Hunyadi-Janos water, and never with any unpleasant effects. The diet should be unirritating, but not every stomach will stand for any length of time a too restricted diet, and some stomachs, even with ulcer, seem to bear better those foods considered less digestible than those classed as easy of digestion. Often the instinct of the patient is a better guide than the most rational theory. Rest is a very important factor of the treatment, the degree of it depending on the severity of the symptoms. It is also important to limit the number of meals and the quantity of food ingested, in order that the stomach may be empty and at rest after the period of digestion should be over. The loss of weight caused in this way will be soon made up when recovery commences, and at this time the administration of additional light meals may be begun.

A NEW TEST FOR THE RECOGNITION OF FREE HYDROCHLORIC ACID IN THE GASTRIC CONTENTS.

J. BOAS (*Centralbl. f. klin. Med.*, 1888, No. 45, 817) recommends resorcin for this purpose, as being a test not responsive to any organic acids or to the acid albuminous compounds. The reagent is composed of resorcin 5 grammes, sugar 3 grammes, and sufficient dilute spirit to make 100 grammes. Five or six drops, or less, of the gastric secretion are mixed with two or three drops of this solution, and heated in a watch-glass or on a porcelain plate over a small flame. When completely evaporated, there develops a rose-red or cinnabar-red color, resembling that of the phloroglucin-vanillin reaction, which gradu-

ally becomes discolored on cooling. The reaction can in like manner be developed on a piece of filter paper. Too strong a heat must not be employed, or the sugar is burnt, and the test does not succeed. Several qualities are necessary to give value to any test for hydrochloric acid in the gastric secretion. These are clearness and constancy, the absolute failure of any reaction in the absence of free hydrochloric acid, and finally the absence of any reaction with organic acids.

After repeated testing of the resorcin sugar test, the author concludes that in all cases in which tropäolin, methyl-violet, and the Günzburg and other tests give a positive result, this will do so likewise. A very convenient method is to administer to the patient, shortly before lavage is performed, a capsule containing 0.2 gramme of resorcin and 0.1 gramme of sugar. A few drops of the filtered or unfiltered gastric contents can then be evaporated on the porcelain plate as before. The author found this method very satisfactory.

THE VALUE OF THE COLOR REACTIONS FOR FREE HYDROCHLORIC ACID IN THE GASTRIC CONTENTS.

SCHAEFFER (*Zeitschr. f. klin. Med.*, B. xv. 162, 1888) reviews the different color reactions for hydrochloric acid, the principal ones of these being, he says, 1, the aniline colors; 2, tropäolin; 3, Congo-red; 4, Mohr's reagent; 5, Uffelmann's test; 6, Günzburg's reagent. Congo-red he considers of no value, for, as Boas has shown, lactic acid will produce the same blueing as hydrochloric acid does. Uffelmann's carbolated-iron reaction is not at all delicate for the inorganic acid. Moreover, a yellow color is produced by a mixture of lactic and hydrochloric acids in certain proportions. For lactic acid the test is delicate, provided no glucose be present, with which it will produce the same tint; and glucose occurs in every stomach when the starches have been ingested.

Mohr's reagent is claimed to be reliable, and the author admits that it is so, in so far that no other substance but hydrochloric acid will give with it the peculiar coloration. His experiments have shown him, however, that it is far from delicate, and that it often fails to reveal the acid when other tests show its presence. Tropäolin is uninfluenced by any organic acid, and is very delicate, especially when used in the form of a tropäolin paper. It is decidedly to be preferred to Mohr's test, though it is not so sensitive as the methyl-violet and Günzburg's reactions.

Of the aniline colors, methyl-violet is the only one largely used, the others not having been found satisfactory. It is very delicate, but unfortunately not reliable, since other substances will produce the same change of color. Especially is it true that a five per cent. solution of lactic acid (a strength not so seldom found in the stomach) and of peptone will produce it. The changing from violet to blue may occur, therefore, when there is not a trace of hydrochloric acid present, but the absence of this change is a positive proof of the absence of the acid. Günzburg's reagent is composed of 2 grammes phloroglucin and 1 gramme vanillin, dissolved in 30 c.cm. alcohol. One or two drops of this are mixed with the same quantity of the fluid from the gastric contents, and heated gently in a shallow porcelain dish. At the edges of the fluid, as it is rolled back and forth, there develops a deep red color if organic

acids are present. The author has made careful trials of this reagent, and finds that when the red color does not appear, the other reactions for hydrochloric acid are also absent. He also details his experiments in full which convinced him that the Günzburg reaction was only absent when there was a complete absence of digestive power in the gastric secretion, depending on a diminution of the free hydrochloric acid. The reaction is not produced by any other body occurring in the gastric secretion than free hydrochloric acid, and is not interfered with by the presence of any other substance. The acid may be present and yet not answer to the test; it being combined with inorganic and organic bases. Thus, in carcinoma ventriculi, if hydrochloric acid be added to the gastric contents, some of it will disappear, having replaced the lactic acid in its combinations and set it free. In these cases, of course, the phloroglucin-vanillin test is negative; but it is always positive when any free hydrochloric acid *capable of digesting* is present. This last clause is, after all, the most important one, for whether any other form of the acid occurs is a matter of indifference from a clinical standpoint.

CONGO PAPER AS A REAGENT FOR FREE HYDROCHLORIC ACID IN THE GASTRIC CONTENTS.

R. SHAEFFER (*Centralb. f. klin. Med.*, Nov. 17, 1888, 841), after discussing at length the value of Congo-red as a test for hydrochloric acid, and showing that it will also respond to lactic acid, even in a dilution of 0.38 per cent., concludes that the blueing of Congo cannot, in every case, be taken as absolute proof that this is produced by hydrochloric acid, but that some control test must always be employed, using a reagent (like tropæolin or that of Günzburg) which is unequivocal.

FATAL GASTRO-ENTERITIS PRODUCED BY PTOMAIN.

BAMBERGER (quoted in *Deutsch. med. Woch.*, 1889, No. 1, from *Wien. klin. Woch.*, 1888, No. 33) publishes an interesting case in which a previously healthy patient was attacked, after eating tainted sausages, by vomiting, headache, and feverishness, followed in a few days by chills, diarrhœa, and tenesmus, and then by high fever, meteorism, and tenderness in the ilio-cæcal region. The fever curve then became that typical of pyæmia; there was peptonuria, enlargement of the spleen, and roseolar and petechial spots. In the course of a couple of weeks evidences of suppurative hepatitis developed. The autopsy revealed an abscess of the pancreas, produced, the author believes, by the action of ptomain, and numerous abscesses in the liver secondary to the pancreatic affection.

THE USE OF CALOMEL AND DIGITALIS FOR ASCITES FOLLOWING HEPATIC CIRRHOSIS.

There has been abundant experience on the employment of calomel as a diuretic in hydrops, especially when of cardiac or renal origin. For that resulting from diseases of the liver it has been but little used, and the opinions of writers differ as to its value in these cases. SCHWASS (*Berlin. klin. Wochenschr.*, 1888, No. 38, 762) would warmly recommend it in ascites of this

nature, having seen excellent and even surprising results follow the administration of the drug. He has also combined calomel with digitalis in the treatment of ten cases, with a permanent removal of the ascites in five of them. In two of these the combination was effective, though either drug alone was of no avail. The author believes that another advantage of the simultaneous exhibition of the two drugs is that the calomel is better tolerated and for a longer time, while the stomatitis, salivation, and gastro-intestinal disturbance are either absent, less intense, or develop later. He reports the five successful cases in detail. In all of them the diuretic action was excellent. It is to be remarked, also, that they came under treatment rather early in the disease. Those in which the treatment was commenced in advanced stages were either not benefited at all, or helped only temporarily. He would recommend the combination of calomel and digitalis for all cases of ascites from hepatic cirrhosis uncomplicated by severe disease of other organs (not including cardiac diseases), and in which the affection has not reached the last stages. Where the effusion is very large it is well to aspirate, in order to relieve the pressure on the ureters, and thus remove any hindrance to the diuretic action of the drugs. This diuretic treatment, though not, of course, curing the hepatic affection, may prolong the life of the patient for months or years.

THE DIETETIC TREATMENT OF CHRONIC BRIGHT'S DISEASE.

BEVERLEY ROBINSON (*Medical Record*, January 5, 1889) says that though the etiology, pathology, and medicinal treatment of Bright's disease are fully treated in the various text-books and journals, but little is to be learned concerning the diet in albuminuria, and this little is contradictory. He divides chronic Bright's disease into the three well-recognized forms: 1. Chronic parenchymatous nephritis; 2. Lardaceous disease of the kidney; 3. Interstitial nephritis.

1. The first form may begin insidiously as a chronic disease, or may follow an acute affection. In either case the same rules of diet may be applied. As food an exclusive milk diet is generally considered to be the best, and the author would favor its employment, because it is easily assimilated, gives sufficient nourishment, produces less urea, and flushes the kidneys with a large amount of fluid. When milk cannot in any way be taken, we are obliged to resort to broths and light farinaceous foods. As a beverage the author prefers pure spring water, of which several pints a day should be drunk. Pure or mildly alkaline water in large quantities is an excellent unirritating diuretic. When milk is not well borne alone, it may sometimes be taken mixed with lime water, carbonic water, Vichy, etc., or as koumiss or peptonized milk. When milk is used pure, it had better be unskimmed, unless it produces digestive troubles, in which case it is best to skim it. From two and a half to four quarts are sufficient to prevent bodily loss.

As a result of clinical experiments instituted by him, and which he details, and from the experience of others, the author believes that a milk diet notably diminishes the amount of albumin excreted by the kidneys. After a time, an exclusive fluid diet may be productive of harm, by causing an over-dilution of the gastric juice, and too great an excretion of urine, or the symptoms of *anæmia* and exhaustion. In such cases, especially if the amount of albumin be small, the exclusive milk diet may be supplemented by a certain amount

of farinaceous or vegetable food. If even this diet becomes objectionable, a small amount of broiled or roasted meat must be allowed daily, taken at an early dinner. Alcoholic stimulants throw more work on the kidneys, and increase the amount of albumin excreted. They are, therefore, to be avoided, except when called for by certain symptoms, as exhaustion, or the profound cerebral anæmia which so often accompanies uræmic symptoms.

2. The dietetic treatment of lardaceous disease of the kidney depends somewhat on its cause. If it be phthisis, the diet is that appropriate for this malady, without special reference to the renal disorder. When the disease which caused the renal changes has disappeared, the diet should be that advised for chronic parenchymatous nephritis.

3. In the dietetic treatment of this form of nephritis, we must endeavor to prevent the accumulation of urea in the blood, and to make up for the loss of albumin. It is not possible to prohibit all nitrogenous food, but the amount allowed should be very small. Milk and cream should be given in abundance, and the other articles of the diet supplied from the vegetable kingdom. In advanced cases, an exclusive milk diet must be employed, and the milk may be diluted with Vichy, if necessary, to render it more palatable. Alcoholic stimulants should be avoided as far as possible, except sometimes in the treatment of uræmia, as stated above. The author closes his paper with a series of quotations of the views of various modern writers regarding the dietetic management of chronic Bright's disease.

THE VARIETIES OF NEPHRITIS FOLLOWING ACUTE INFECTIOUS DISEASES IN CHILDREN.

VON JAKSCH (*Wien. med. Presse*, No. 49, 1888) shows that febrile albuminuria is much more frequent in adults than in children; the ratio being, in his experience, 35.2 per cent. in the former, and only 19.6 per cent. in the latter. In many cases of acute infectious diseases in children the urine contains unusually large numbers of microorganisms of different kinds, as long as fever persists, so that the author is disposed to consider the kidneys in these diseases as the organs for the elimination of microorganisms, though not always of those which produce the disease in the individual cases. Letzerich has described a form of nephritis caused by a certain microbe which he describes. V. Jaksch, however, says that more than one form of microorganism is found in the kidneys in children with acute nephritis. There are different varieties of cocci associated with sepsis besides the coccus of erysipelas, which may produce in children severe renal affections with the symptoms of acute inflammation.

In discussing the varieties of nephritis which occur in children, he says that the primary form is by no means so rare as is generally supposed, and that the chronic form is also not unusual. Clinically there may be diagnosed acute nephritis, chronic nephritis, sometimes the cases of chronic nephritis accompanied by fatty change of the kidney, contracted kidney, and amyloid degeneration of the kidney. In explaining his views on uræmia and ammonæmia he claims that the symptoms of uræmic intoxication are produced perhaps in part by retention of acids in the blood, but principally by the retention of an alkaloidal substance which normally is present in the urine.

Ammonæmia is in like manner due to the presence in the blood of an alkaloidal substance. In this case, however, it is produced in the bladder, where, under the influence of microorganisms, the urine decomposes and sets up a cystitis, thus allowing the poison to be absorbed.

In regard to the therapy, the author says that numerous experiments have taught him that even large doses of most of the antipyretics are not irritating to the kidneys, but that they also have no influence on the nephritis. The only exception is salicylic acid, which, given from the beginning of scarlatina, not only seems to diminish the intensity of the attack, but to banish the danger of scarlatinal nephritis. In general, however, he is opposed to all vigorous treatment, and recommends a strict milk diet as the most rational means of cure.

HAGENBACH (*Ibid.*), in discussing more particularly the clinical side of the subject, refers to the great frequency of renal inflammation after scarlet fever. In 81 autopsies on cases of scarlatina at the Basle hospital, nephritis was found 55 times. The first appearance of the inflammation may occur at different periods of the disease. Its symptoms are various, and he has seen uræmia only 27 times in 416 cases. There seems to be a family predisposition to scarlatinal nephritis. Hypertrophy and dilatation of the left ventricle are very common. The affection lasts two or three weeks or longer, and usually ends in recovery. Albuminuria is rather common in diphtheria, the author having observed nephritis 52 times in 150 autopsies. According to his experience, the albuminuria usually occurs in the first week of the disease, and is nearly always due to renal inflammation, though in very severe cases cardiac weakness or laryngeal stenosis may bring it about. Nephritis is rare in measles, varicella and rubella, and the same is true of it in catarrhal angina, parotitis, and aphthous stomatitis. He has seen it occur but rarely in typhoid, the kidneys being involved only 8 times in 300 cases, while in 24 autopsies there was nephritis in but 3 instances.

THE RELATIVE VALUE OF OPIUM, MORPHINE, AND CODEINE IN DIABETES MELLITUS.

Codeine, says FRASER (*Brit. Med. Journ.*, January 19, 1889, 118), is in its important actions only a weak morphine diluted by the addition to it of methyl. As it has been so largely used in the treatment of diabetes, he has made some clinical experiments with it in this disease, comparing it with the action of opium and of morphia. These seem to indicate that codeine is a less powerful remedy in diabetes than either of the other drugs, and to confirm the view that in its therapeutic value it ranks as a weak or diluted morphia. As its cost is about three times that of morphia, and as the large demand for it has led to its being largely manufactured from the latter drug, and being, therefore, an artificial product, there should be more clear evidence of its superiority to justify its administration in this disease.

ALKALINE INTRA-VENOUS INJECTIONS IN DIABETES

Last year R. Lepine reported the case of a patient with diabetes already in an advanced state of coma, to whom he gave an intra-venous injection of 3 litres of warm water, containing 44 grammes of bicarbonate of soda. It

could not be said that the immediate effect was bad, and the treatment could not be condemned as useless, because the condition of the patient was so extreme when it was instituted. Minkowski having since reported a successful case, LEPINE (*Rev. de Méd.*, December, 1888, 1004) records another instance in which he followed this procedure. The patient, a well-marked case of diabetes, suffered from headache, trembling of the limbs, unconsciousness, clonic convulsions, rapid pulse, and hallucinations. The urine had a very characteristic sour odor, and examination at different times showed it to contain formic acid, and very probably oxybutyric acid also. In view of the patient's condition it was decided to try an intra-venous injection; and accordingly 600 c.cm. of a warm sterilized 5 per cent. solution of bicarbonate of soda were administered in this way. During the process the pulse became feebler, and afterward there was an intense chill, followed by a rise of temperature, an increase in the rapidity of the pulse, and a semi-comatose condition. Later this deepened into profound coma, followed by death. The autopsy revealed no condition sufficient to explain the fatal termination of the case. Shortly before death the patient voided neutral or feebly alkaline urine.

The author concludes from this experience that although this alkalinity of the urine was produced by the saline injection, it did not relieve the diabetic symptoms, but rather aggravated the cerebral condition, and accelerated the fatal ending.

A GOOD BREAD FOR DIABETICS.

Admitting that the so-called gluten flours are not what they should be, and that the first thing in the treatment of diabetes is the avoidance of starches and sugar, J. A. JEFFRIES (*Bost. Med. and Surg. Journ.*, Jan. 14, 1889, p. 87) discusses the production of a suitable bread for these cases. Experience seems to show that it is the form and taste of bread which are desired by the patient, and not that starch is craved by the stomach and intestines. He has succeeded in preparing two kinds of bread. The first is simply an improvement on those now in use, but has the merit of being cheap and easily made. The recipe is: 1 cup of Graham flour; 1 cup of the best bran previously scalded with 1 cup of boiling water; 2 eggs; German yeast or baking powder; salt to taste; 1 cup of milk or water. To be mixed with a spoon. This bread contains 17.72 per cent. of starch, equalling 19.68 per cent. of sugar. The second bread, he claims, is a great improvement on those ordinarily in use, but it is as yet difficult to prepare and expensive. It is made from gluten, which may be obtained from the starch factories, and ground into a fine flour. The author procured that which he employed from Thomas Metcalf & Co.

The formula for the bread is: 1 cup of gluten flour; 1 cup of the best bran previously scalded; 1 teaspoonful of baking powder; salt to taste; 2 eggs; 1 cup of milk or water. This bread, also, must be mixed with a spoon, as to use the hands would be even worse than in the making of ordinary bread. Bread thus made is palatable, nutritious, healthful, and contains only 4.57 per cent. of starch (5.08 per cent. of sugar) according to the analysis of Dr. Harrington.

WOLTERING (*Berlin. klin. Wochenschr.*, 1888, No. 38) also describes a gluten bread similar to the above. He gives analyses of wheat flour, and then of

gluten, comparing the latter with the albumen of eggs and of flesh, and showing that it is very similar to them in chemical composition. A large quantity of gluten is produced in the manufacture of starch, but finds little employment, except in making shoemakers' paste. The author has made use of a gluten flour manufactured by Joh. Hunchausen, of Hamm. The formula for the preparation of a bread for diabetic patients is as follows: 500 grammes of gluten flour are stirred with $1\frac{1}{2}$ heaping tablespoonfuls of baking powder and sifted, and then rubbed vigorously in a bowl with a wooden spoon and $\frac{1}{4}$ litre of lukewarm water added. Nothing further is needed before baking.

Bread thus prepared has a somewhat bitter-sour taste, which is not prevented by the addition of eggs, milk, butter or bicarbonate of soda. Saccharin only gives an unpleasant sweetish taste. Sweet cream is, perhaps, the best ingredient for this purpose. If the bread when cut be spread with good butter and covered with ham, meat, or anchovies, it becomes very palatable. In twenty-four to forty-eight hours this gluten bread becomes more doughy, and must then be dried. For this purpose it is cut into small pieces the size of the little finger, and browned in the oven until it becomes the color of Zwieback, and quite crisp. The author is himself a diabetic, and has tried many kinds of diabetic bread, none of which was so agreeable to him, or so easily digested as that which he describes. This bread contains, on the average, 55 per cent. of albumen, 0.20 per cent. of fat, and only 2.75 per cent. of starch.

CONTRIBUTION TO THE STUDY OF THE INNERVATION OF THE BLADDER, RECTUM, AND GENITAL FUNCTION IN MAN.

BERNHARDT (*Berliner klin. Wochenschr.*, 1888, No. 32, 637) reports a case of a man who fell from the second story upon his seat, and immediately experienced pain in his back, and inability to pass urine, though with no incontinence, while the feces were evacuated without his knowledge or control. When examined, nine days after the accident, this condition described still persisted. He could stand alone, but with pain in the back in the region of the seventh to the twelfth dorsal vertebræ, and this locality seemed somewhat swollen, and was painful on pressure. While lying in bed both legs could be moved in a normal manner, and without pain. The reflexes were normal, tactile sensibility, and temperature and muscle sense were undisturbed in the lower extremities, except on the inner half of the posterior surface of both thighs, beginning at the upper border of the lower third of the thigh, and extending upward to those parts of the buttocks contiguous to the anal fissure. In this there was total anæsthesia to touch, differences of temperature, and pricking with a needle. The anus, crotch, perineum, scrotum, and penis were also involved, but the inner surface of the thighs, the sacral region, the skin of the belly and groins were normal, and the testicles themselves were sensitive to pressure. The patient had been under observation four months at the time his case was reported, and had been persistently treated with electricity, with very little improvement.

It is interesting to note that erections occurred under normal conditions, and that the patient was perfectly able to effect coitus, feeling all the sensation natural to it. The semen, however, remained in the urethra, and flowed slowly and in drops from it, only after coitus had been completed.

The author then discusses the bearing of the symptoms on the nature of the injury, and shows that the lumbar enlargement, the exit of the nerve, and the lumbar plexus could not have been injured. It is impossible to determine what the pathological nature of the lesion really was, but it is certain that there was either a central or peripheral paralysis of the pudendal plexus. He details in brief several similar cases reported by others. These, with his own case, prove that the function of the bladder and rectum is dependent on a normal condition of the lowest part of the spinal cord, below the lumbar enlargement, and of the nerves arising from it. It is evident that the same symptoms may be produced by a disease of the nerves of the coccygeal and pudendal plexuses, without any involvement of the spinal cord itself. The case now reported teaches, therefore, that the characteristic symptoms of paralysis of the bladder and rectum with the anæsthetic symptoms described may be produced by an acute trauma; that the nerves controlling erection and ejaculation are separated from those which preside over the rectum and bladder; and that potency and *libido coeundi* may persist, though there be an *impotentia generandi*, due to lack of expulsive power.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

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CLINICAL EXPERIMENTS WITH ETHER.

DR. FRITZ FEUTER (*Deutsche Zeitschrift für Chirurgie*, December, 1888), in an elaborate article upon ether anæsthetization, reviews the literature of the subject, and records his own experience in a large number of cases. He has always employed a large face mask, around the edges of which a folded towel is laid to prevent evaporation of the drug.

The following four points were separately dealt with as being of most importance: First, the time from the beginning of anæsthetization until anæsthesia is produced; second, the quantity of ether necessary for this; third, the total quantity of ether used; and fourth, the duration of the anæsthesia. His method of administration is as follows: From a graduated bottle about fifty centimetres are poured upon the mask for an adult, for children half this quantity is sufficient. The mask is then slowly brought down to the face, so that the patient gradually becomes accustomed to the fumes; this does away with that painful choking which always occurs if the mask is abruptly placed upon the face. So soon as the mask is well over the face, a folded towel is placed around it, and the mask is not removed again until there is complete relaxation of the extremities. In this way the patient is continually inhaling ether fumes, for even his exhalations are partly reinhaled, and assist in pro-

ducing anæsthesia. With these precautions carefully adhered to, the author has invariably found that complete anæsthesia could be induced within two minutes. More than this, the amount of ether subsequently required to maintain unconsciousness is remarkably small. Often in operations of over a half hour's duration, and even longer, no addition of ether is necessary.

In his opinion the two most important points upon which the success of etherization depends, are the concentration of the fumes and the non-removal of the mask. The nausea following etherization he believes to be due to the swallowing of saliva which is filled with ether, the secretion being greatly increased by the drug; naturally, therefore, the less ether used the greater probability that nausea will not be produced; and indeed his experiments seem to justify this conclusion, for in 150 cases vomiting only occurred in 10, and in two of these the patients had taken a meal immediately before the operation. In quoting the statistics of the Geneva clinics, he states that out of 553 cases, vomiting occurred in 148. Feuter continues by giving a list of personal observations which differ but slightly from those of other practitioners. One fact, however, deserves special notice, viz., he has observed in several cases that when the patient has taken a moderate quantity of alcohol just previous to the operation that the anæsthetization is greatly accelerated; indeed, in one instance hardly a minute passed before the patient was in a complete stupor. In the second part of his article, which Feuter designates the "experimental part," some cases are cited in which serious results have followed the use of the drug. Emmet was the first who pointed to the danger of etherizing patients affected with nephritic troubles. He claims that it is absolutely necessary to examine carefully the urine of such patients before operating, and holds that the presence of albumin is a positive contra-indication for the use of ether, and direct indication for the use of chloroform. Other authorities are of the same opinion.

In direct contradiction of the above statements, Feuter declares that he has frequently etherized cases of albuminuria without these symptoms resulting. Of extreme interest was the case of a child of five months which was operated upon for cavernous angioma of the left arm and the right side of the thorax. It was not noticed upon admission that the child was suffering from acute albuminuria. The cauterization of the angioma necessitated anæsthetization, and this was done with ether. Three days before the operation large quantities of albumin had been traced in the urine, but neither immediately after the operation, nor until three days later, could the slightest trace be found. Another similar case is quoted. Feuter then records six experiments upon dogs, which he made at the Pharmaceutical Institute of Berne, with the following result: A general decrease of temperature was always observable at the rate of about one degree centigrade an hour. After death the whole abdominal and thoracic cavities were pervaded by a strong smell of ether. The heart was found in diastole. Neither macroscopically nor microscopically did the kidneys show any change. Albumin was never found in the urine. This, he thinks, goes to prove that the kidneys are not affected by etherization. Death never occurred except when intentionally caused by excluding all air from the animal. Accompanying the article are complete tables which clearly elucidate both the experiments and conclusions of the author.

PEPSIN IN SURGERY.

DR. HENRY B. DOUGLASS (*Med. Record*, Dec. 22, 1888) has recently employed pepsin in the form of scales or as an ointment, with lanolin, 1 : 5, in ulcers, in the removal of cicatricial tissue, etc., and concludes that: 1. In all ulcerations covered with a slough, or having a membranous base, pepsin is of use to digest this slough and bring about a healthy condition. 2. The efficiency of the pepsin ceases when the slough has dissolved. 3. In cicatricial tissue causing ankylosis pepsin is of use by dissolving the cellular element. On this condition pepsin may act similarly to mercury and the iodides, or as a digestive.

SEPTIC INTOXICATION AFTER ENEMATA.

The absorption into the blood and lymph-streams of elements from decomposing masses in the intestine is a common result of habitual constipation. The condition is chronic, and its effects are slowly induced.

MR. G. H. BURFORD (*The Lancet*, Dec. 15, 1888) calls attention to a form of toxæmia, similar in origin, but suddenly induced and characterized by symptoms, at least in pronounced cases, peculiar to septic intoxication of a mild type. Inspissated but decomposing fecal masses, frequently associated with an arid, scarcely secreting mucous membrane, are innocuous so long as their dryness is maintained. If, in such case, a quantity of warm, bland fluid be suddenly introduced from without into the gut, solution of some of the organic products of decomposition is effected, osmosis goes on even during the short period of temporary retention, and lymph-channels and blood-streams are charged with a dilute, diffusible septic poison. As from other parts of the alimentary canal, the effect of such general diffusion is exhibited often as a sharp attack of urticaria; but, as here, the diffusible poison is specially noxious, mild septic symptoms are sometimes superadded.

He details eleven cases in which these conditions were superinduced by enemata, and summarizes them as follows:

These cases constitute an ascending series, in which the symptoms become progressively more pronounced and extensive. Commencing with a simple erythematous rash, localized in distribution and mild in type, the next grade presents a typical urticaria, with minute but obvious wheals diffused over the trunk and extremities, and lasting about forty-eight hours, with sometimes some concomitant malaise. Finally, the severest form has superadded to these skin symptoms such undoubted signs of mild septic intoxication as sub-acute pyrexia and, as a concurrent, sore throat, the latter existing for from three to four days.

These sequences presented themselves, on the average, after from three to four per cent. of the enemas administered. They are particularly liable to ensue if enemata be given within three or four days after the administration of ether, in cases in which the intestines have not been thoroughly cleared out beforehand. They may appear indifferently after the use of any ordinary fluid as injection, provided it be used in sufficient quantity. With glycerine enemata, where very small quantities only are used, no such results have accrued. He has seen cases in which these post-enemal appearances have been

diagnosed as mild scarlatina or r  theln; and it is with a view of eliminating this from the category of doubtful eruptions that he has cited the cases as illustrative of a hitherto undescribed condition, as well as to record clinical observations regarding the influence of altered alimentary secretions on intestinal resorption.

A NEW METHOD OF RAISING THE EPIGLOTTIS.

DR. BENJAMIN HOWARD (*The Lancet*, Nov. 17, 1888) reports, at considerable length, his researches as to the best method by which, in cases of apn  a, with falling backward of the epiglottis, the latter can be raised so as to permit of the free entry of air to the respiratory passages. He gives numerous reasons for believing that traction on the tongue does not have the desired effect upon the epiglottis, and shows that the only practical method of attaining this end is by extreme extension of the head and neck. For making this he gives the following reasons:

Traction on the tongue is ineffectual because:

a. The tractile force supposed to be exercised upon the epiglottis is arrested chiefly by the fr  num lingu  , and through the muscular fibres within it is expended upon the inferior maxilla into the genial tubercles of which they are inserted.

b. The surviving force is expended almost entirely upon, and intercepted by, the anterior pillars of the fauces.

c. For any tractile force which may survive, a continuous and sufficient medium for its transmission to the epiglottis is wanting.

Extension of the head and neck is the only sure means of causing instant and complete elevation of the epiglottis, because: by a three-linked chain, in which the hyo-epiglottic ligament is the lower link, the body of the hyoid bone the central link, and the combined genio- and mylo-hyoidei muscles the upper link, the epiglottis is so connected to the body of the inferior maxilla, that above a certain point, as the body of the lower jaw is moved upward, the epiglottis instantly, irresistibly, and inevitably moves upward exactly in unison till it is erect. The violent wrenching asunder of the clenched teeth, in proportion as it depresses the body of the inferior maxilla, antagonizes a distinct effort of Nature to maintain the elevation of the epiglottis.

Having, by bringing the patient to the edge of the table or bed, or by elevation of the chest, provided that the head may swing quite free, with one hand under the chin and the other on the vertex, steadily but firmly carry the head backward and downward. The neck will share the motion, which must be continued until the utmost possible extension of both head and neck is obtained. Assuming the mouth to be shut and the inferior border of the inferior maxilla to be at a right angle with the cervical column, as in the average recumbent posture, the head must be continued to be extended from thirty to thirty-five degrees more before it is possible for the epiglottis to be affected at all. Not until after the skin from the symphysis to the sternum is quite tense do the relaxed muscles in question beneath it become tense at all. These being tense, from this point the elevation of the epiglottis begins.

In a nut-shell: Make the line of skin from the chin to the sternum as

straight as it can be made, and the complete elevation of the epiglottis is assured.

By extension of the head and neck carried to the utmost, the remaining obstructions from the backward-fallen tongue, the velum palati, and uvula, are also simultaneously removed, and the entire pharynx is enlarged throughout. Because: *a.* The tongue, the dorsum of which before fell by gravitation upon the then horizontal posterior wall of the pharynx, falls upon the now horizontal arch of the palate. *b.* The velum palati, by means of the great tension of the palato-pharyngei muscles, is pulled away from the posterior wall of the pharynx, the entire membrane being stretched tightly forward and downward, behind part of the dorsum of the tongue, helping to complete the shutting of the tongue out of the pharynx and into the mouth, and together with its dorsum forming a partition—the anterior wall of a new air-way, thus created and maintained. *c.* The pharynx, anteriorly, from the base of the tongue to the cricoid cartilage, is stretched strongly forward by the extreme tension of the sterno-thyroidei muscles.

Dr. Howard summarizes his interesting paper as follows:

1. Contrary to universal belief, traction of the tongue cannot raise the epiglottis.
2. By sufficient extension of the head and neck, whether by volition, instinct, reflex action, or by the effort of another, whether in the healthy, the dying, or the dead, the epiglottis is instantly, and beyond prevention, made completely erect.
3. By complete extension of the head and neck the tongue and velum are as respiratory obstructions, simultaneously with the epiglottis, removed; and without a moment's delay the entire air-way can be straightened, enlarged, and be made free throughout by the nearest person.
4. If syncope happens to be the chief factor, or only incidental, this also gets thus the quickest and best corrective.

He expresses the hope and confident belief, that the facts above submitted will be found to be permanent additions to our means of averting death.

A NEW DILATOR FOR TRACHEOTOMY.

MR. JOSEPH COLLIER calls attention (*The Lancet*, Dec. 22, 1888) to the difficulty in introduction of the tube arising from the interposition of fascia in those cases in which great urgency has led to hasty opening of the trachea without first exposing and cleaning it. To avoid this he has devised a dilator which differs from ordinary dilators in the following particulars:

First, it has a cross, or scissor action, since that is the one to which most persons are accustomed, and which is therefore desirable in such an instrument; secondly, there is no outwardly projecting lip at the extremity, since the difficulty lies in inserting the dilator, and not in keeping it in place when once inserted; thirdly, and of most importance, there is a half groove on the inner surface of each dilating limb, so that when the instrument is closed there is formed a full groove as on a director. It is advised that the operation be performed as follows: The patient's head being thrown well back so as to expose clearly and put on stretch the parts in front of the neck, the usual incision is made and carried down between the sterno-hyoid muscles. If extreme rapidity is indicated, the knife, held perpendicularly, with its back toward the sternum, and guarded from going too deeply by the index

finger placed on the side of the blade, is pushed into the trachea, and an incision of the required length is made upward through the tube and the fascial layers covering it. Then, before removing the scalpel, the groove on the dilator is applied to the back of the blade, and, with this as a guide, the dilator is slipped down into the trachea and the scalpel withdrawn. The dilator can now be opened, when air freely enters the trachea, and a tube can be inserted with ease, as it is to some extent guided by the half grooves.

DISTENTION OF THE STOMACH AND LARGE INTESTINE IN THE DIAGNOSIS OF ABDOMINAL TUMORS.

WINKOWSKI (*Berliner klin. Wochen.*, 1888, xxxi.) has examined more than one hundred abdominal tumors with reference to their changes of position when the stomach is distended with carbonic acid and the large intestine with water. Observations of the exact relations of the tumor were taken before and after such distention. He found that tumors of the liver and gall-bladder are pressed upward and to the right; tumors of the spleen are pushed to the left and downward by distention of the stomach, to the left and upward by distention of the bowel; tumors of the kidney are but little affected by distending the stomach, but if the bowel is distended will either rise and apparently disappear, or will be pressed backward and outward. Tumors of the colon become more defined and broader; growths involving the stomach itself behave differently, according to whether they affect the lesser or greater curvature, in the former case rising and disappearing, in the latter remaining broader and less defined in area.

PELVIC HÆMATOCELE.

DR. CHARLES B. PORTER reports (*The Boston Med. and Surg. Journal*, December 27, 1888) the case of a woman, aged thirty-two years, who was admitted to the hospital with severe abdominal pain, which had come on suddenly without prodromata, and was accompanied by bilious vomiting, a circumscribed swelling, dull on percussion, was found in the right iliac fossa. Three days later, pain continuing and the swelling remaining unchanged, an incision was made in the right iliac region, along the inner half of Poupart's ligament, and about an inch above it. On opening the peritoneum there came at once into view a tumor, evidently cystic, its walls being very dark colored and glistening. The cyst did not appear to be adherent, but its relations were not thoroughly explored, for fear of rupture of its walls, which were exceedingly tense. Using fine, round needles and silk sutures, the cyst wall was stitched to the anterior parietal peritoneum in such a manner that the presenting portion of the cyst, about the size of a half dollar, was entirely shut off from the general peritoneal cavity. In this surface a free opening was made, and about three pints of dark, bloody fluid escaped. There were no clots. Exploration of the cyst discovered several flesh-like projections into its cavity, feeling like clots; these were not disturbed. The edges of the wound of the cyst were stitched to the abdominal wound, and a large drainage tube, reaching to the bottom of the cyst, was fastened in. The cavity was then thoroughly washed out with a hot solution of sulpho-naphthol.

The patient made an uninterrupted recovery. The fluid was thought to be ascitic fluid with an admixture of blood.

A NEW TREATMENT FOR SUPERFICIAL CYSTS.

BARTH (*L'Union Médicale*, Jan. 15, 1889), in treating lymphadenomata by hypodermatic injections of Fowler's solution, observed that after one or two injections a little swelling and tenderness occurred, threatening the development of an abscess, and that if treatment were arrested the tumor not only returned to its original dimensions, but often underwent a consecutive atrophy and even entirely disappeared. Winiwarder believed that this was due to the action of arsenious acid upon the albuminoid tissues producing a kind of necrobiosis. Whatever the theory, the same action appears to occur in many cases of cystic growths. Barth reports 8 cases, 5 of synovial cysts, 3 of sebaceous cysts, 6 of which were cured by the injection into their cavities of one or two drops of Fowler's solution; in 1 of the 2 remaining cases the cyst, which had disappeared, returned, and in the last case the pain of the first injection was so great that the patient declined further treatment. Barth directs attention to the necessity of absolute asepsis during the operation, which should not be employed in the case of tumors of a doubtful character, or especially in those which already seem disposed to spread. The injection should not be made through tissues which contain the microorganisms of pus, or into tubercular tissues. The pain of the operation may be much diminished by adding to the Fowler's solution one to two per cent. of muriate of cocaine, a combination which Barth has found of great value in intraglandular injections.

TREATMENT OF FRACTURES AT THE LOWER END OF THE HUMERUS.

DR. CHARLES A. POWERS records (*The Medical Record*, Dec. 22, 1888) the results obtained in fifty consecutive cases of fracture at the lower end of the humerus, treated by plaster splints applied with the elbow at right angles or thereabouts. He recapitulates as follows:

Thirty-six completely regained the functions and present no deformity; in seven the functions are a few degrees short of full; in one they are very limited; in two there is moderate deformity, with a slight loss of function; in one there is extreme gun-stock deformity, with complete use of the limb; one is ankylosed, and three are yet in the second month of treatment.

In most of the foregoing cases the injury was ascribed to a fall on the elbow, this varying from a slip on the sidewalk or a fall from a chair to a descent of ten feet; in two to a fall on the hand, in one to a passage of a wagon-wheel, in one to a violent wrench to the elbow; in several the nature of the accident was not known.

From a diagnostic point of view, very much importance should not attach to the nature of the injury. Diagnosis must be based on the evidence gotten by physical examination of the affected part.

The presence of bony crepitus and abnormal mobility are the most valuable diagnostic points. Disability, local pain and tenderness, ecchymosis, and swelling are common to contusions and sprains, as well as to fractures, though present, as a rule, to a greater degree in the latter. We are told to see that

the bony prominences, the olecranon, head of the radius, and epicondyles bear their normal relation one to the other. This is good as far as it goes; it bars out dislocation; but there is frequently fracture without appreciable displacement. Well-localized bony crepitus and a false point of motion are the evidences on which our diagnosis must be based.

By firmly grasping the humeral shaft with one hand and seizing the condyles transversely, "rocking" the lower part strongly on the upper will determine whether the condylar portion is attached or detached. Each epicondyle and condyle may, in turn, be subjected to a like manipulation. Should the base be broken off, one condyle must be rocked upon the other to determine the presence of three or more fragments. If much swelling be present, it is not easy to grasp the condyles, yet steady, firm pressure will sink the fingers until they reach and hold the bony joints. Swelling obscures the outer condyles to a much greater extent than the inner. Even though the effusion be great, there is never any difficulty in grasping the latter. The manipulation should be gentle, yet firm, and one should apply all due force to the bony parts.

NERVE-STRETCHING IN LEPROSY.

DR. BEAVEN RAKE records (*British Medical Journal*, December 22, 1888) the results of 100 operations performed on 60 patients. In 38 cases the indication for the operation was ulceration, and, as a rule, more or less good effect was observed, especially in perforating ulcer of the sole. In 9 cases the stretching was done for pain, in several with remarkably satisfactory result. In 33 cases of stretching for anæsthesia, the operation, as a rule, produced but little benefit. In 18 cases of tuberculation no effect on the growth of the tubercles or on the general infiltration of the skin was produced. In 2 cases it was thought that the separation of necrosed bone was hastened. About half the cases were benefited. In about half the nerve was found enlarged, especially the median. The sciatic was never found thickened.

Dr. Rake concludes: 1. That the great sciatic is the most satisfactory nerve to stretch, for it is nearest the spinal ganglia and commands the supply of the whole leg and foot and the back of the thigh. 2. The chief indications for the operation are perforating ulcer, some cases of necrosis, and pain, whether associated with perforating ulcer or with peripheral neuritis without ulcer.

OTOLOGY.

UNDER THE CHARGE OF

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A NEW FORM OF CLINICAL TUNING-FORK.

DR. CLARENCE J. BLAKE has devised a new form of clinical tuning-fork (*Boston Med. and Surg. Journal*, Dec. 20, 1888). The value of the tuning-fork, as an instrument of precision, is lessened by the fact that not only the

intensity of its tone, but also its tone value may be varied by the means and the force setting it in vibration. These difficulties may be overcome by making a tuning-fork which will flare at the end of the tines, and be also weighted by this enlargement at the distal points of the prongs. Such a fork "is less productive of overtone, and by drawing the fork through the fingers, or through a small ring, from below upward, the pressure upon the inclined surfaces of the projections forces the tips of the tines together, and the release sets them in vibration with a definite initial excursion."

DERMAL CASTS OF THE MEMBRANA TYMPANI IN PHTHISIS.

DR. H. L. MORSE exhibited at the meeting of the Boston Society for Medical Improvement, Nov. 26, 1888, three casts of the membrana tympani (*Boston Med. and Surg. Journal*, Dec. 20, 1888). These casts consisted of the whole dermoid coat of the membrana, which had been removed entire from the ears of two phthisical patients. Dr. Morse had records of a number of other phthisical patients from whom he had removed similar casts of the membrana tympani. All of these patients had what might be termed well-marked physical signs of phthisis of a "rather low, mild form." In one of the cases the ear-disease antedated by three or four months the first symptoms of pulmonary disease.

DR. BLAKE, in the discussion which followed, said, these casts will form and slowly or rapidly separate, according to the rate of progress of the tuberculous disease; indeed, the implication of the ear seems to bear a definite relation in its rate of progress to that of the progress of the disease in the lung. This mode of progress of this form of aural disease, commensurate with that of the simultaneous lung-disease, Dr. Blake suggested, may be due to the reflex relationship between the lung and the ear.

DR. J. ORNE GREEN was inclined to regard the disease simply as "desquamative inflammation," but not in any way of a reflex nature, nor specific in the phthisical. The designation "desquamative" is not an arbitrary one, but one proven by microscopic examinations by Wendt, of Germany, and accepted by a number of other German authorities. Since Wendt's time, Dr. Green is not aware that any one has attempted any microscopic investigation of the subject.

THE PATHOLOGY AND PATHOGENY OF OTITIS MEDIA SCLEROTICA.

DR. JOSEPH GRADENIGO, of the University of Padua, has investigated this most interesting and important subject, and communicates his results in the *Annales des maladies de l'oreille*, etc., Dec. 1888. He first gives the notes of the post-mortem examination in two cases of sclerosis of the middle ear. The lesions in these cases do not permit a formulation of a positive opinion upon the morbid process which produced them. The morbid changes are characterized by thinning of the mucous membrane, its fibrillar structure, and paucity of bloodvessels. But it cannot be positively decided yet whether these changes are primary or secondary. The absence of perivascular changes, thickening of the *tunica adventitia*, and the non-participation of the epithelium in the morbid process, argue against the latter hypothesis in the cases reported.

From the observations he has made, Gradenigo concludes that the bands and membranes found in the tympanic cavity in otitis sclerotica must not be regarded as neoplasms, but simply as remnants of the embryonal gelatinous tissue. Because it is in the partial persistence of just such a tissue that we should look for an important pathogenetic factor. It is also necessary to establish a sharp distinction between the different forms of adhesive processes in the ear, viz., between those secondary to otitis media purulenta and perhaps some forms of acute catarrh, and the adhesive processes secondary to otitis sclerotica and chronic aural catarrh in general. This, however, is not easy to do.

Synechiæ and adhesions occur only in the first form named above. In the various forms, however, of so-called dry catarrhal otitis, such formations cannot be due to inflammatory processes, as the latter cannot be found to have occurred at any time in their course.

Gradenigo does not admit the statement so widely made in the literature of this subject, that the tympanic cavity of the human fœtus is entirely filled with a mass of gelatinous tissue, since he has found a true tympanic cavity in the human embryo when only 4-4.5 centimetres long. Further researches confirmed the opinion that absorption of this gelatinous tissue is not directly connected with respiration. It is generally rapidly completed near the time of birth. Such absorption is due to some determining power of embryonal development. In guinea-pigs the gelatinous tissue is absorbed before birth; in cats, after birth, as a rule. The microscopic structure of the bands and membranes found in sclerosis of the middle ear shows it to be formed from remnants of this gelatinous tissue of embryonal life. "Since observations upon guinea-pigs and cats demonstrate that the absorption of this gelatinous tissue is an autogenetic process—that is, it is intimately connected with peculiarities of development of the animal—it is easy to perceive how heredity represents one of the most important factors in the etiology of *otitis sclerotica*." "It must be admitted that in a family all the children can have a persistence of this gelatinous tissue in the drum-cavity at birth, and hence there can be established in them a grave predisposition to sclerosis." The morphological element must not be disregarded in the pathogenesis of *otitis sclerotica*.

This paper is of the greatest interest and importance to all otologists, and deserves a careful reading.

TREATMENT IN CASES WHERE SYMPTOMS POINT TO INFLAMMATION IN THE MASTOID ANTRUM AND MASTOID CELLS, BUT WHICH DO NOT CALL FOR AN ARTIFICIAL OPENING IN THE MASTOID PROCESS.

Under this title DR. HENRY L. MORSE has presented a most valuable paper on an important subject before the Boston Society for Medical Improvement (*Boston Med. and Surg. Journal*, Dec. 20, 1888). The method may be thus recapitulated:

In acute inflammation of the intra-mastoid region with imperforate membrana tympani the order of procedure is paracentesis, inflation by Politzer's method or by the Eustachian catheter, and hot or cold applications *behind* the ear. Heat may thus be applied by means of a kidney-shaped salt-bag seven inches long, and cold may be applied by means of ice wrapped in

rubber cloth or by means of a Leiter's apparatus, which consists of a series of closely coiled leaden pipes, through which hot or cold water may be made to circulate. When acute inflammations occur with purulent or muco-purulent discharge, but with inadequate opening in the membrana tympana, a larger incision should be made in the membrane; then inflation, syringing through the Eustachian tube with weak solutions of bicarbonate of soda, and hot or cold applications over the mastoid.

When inflammation with purulent discharge occurs, and the posterior wall of the auditory canal bulges into the latter and nearly closes the passage, we should employ frequent and prolonged douching with warm water; free incision into the bulging wall of the canal and enlargement of the perforation in the membrana as soon as the swelling in the canal subsides sufficiently to permit getting at it; leeching behind the auricle, and, in the severer cases, a Wilde's incision, especially if fluctuation is felt. In chronic inflammation, when polypi are present, use the snare; and after removal of polypi employ the tympanicsyringe for softening and removing cholesteomatous masses in the attic. Many of these forms of treatment, as Dr. Morse states, require the specially trained hand of an aurist, "but, on the other hand, some of them can be performed perfectly well by the general practitioner, and, if it so happen that he cannot call an aurist in consultation, it is far better, in my opinion, for him to try some of the methods I have mentioned rather than feel that if the patient has pain, tenderness, and swelling behind the ear, there is but one thing to be done, namely, to make an opening into the mastoid cells."

THIRTY CASES OF RESECTION OF THE MASTOID APOPHYSIS.

Schmiegelow's article on this subject is reviewed in the *Nordiskt Medicinskt Arkiv*, 1888. The ages were as follows:

Under 1 year	.	.	.	.	.	.	.	3
From 1 to 10 years	.	.	.	.	.	.	.	5
" 11 to 20 "	.	.	.	.	.	.	.	6
" 21 to 30 "	.	.	.	.	.	.	.	12
" 31 to 40 "	.	.	.	.	.	.	.	3
" 41 to 50 "	.	.	.	.	.	.	.	0
50 "	.	.	.	.	.	.	.	1
								30

In twelve cases there were acute symptoms; in eighteen cases the inflammatory diseases in the mastoid were of a chronic form. Seven cases were subperiosteal abscesses simply. In the acute cases five were superficial caries, in five others the disease was limited to the interior of the mastoid cavity, in two of which sinuses developed, leading to openings in the cortex. In ten cases the mastoid cells were filled with pus, without breaking down of the osseous tissue.

Operation in these twelve cases affected the suppuration in the middle ear as follows: In nine cases, entire cure; in one instance the patient died on the seventh day; in one case the suppuration had not produced softening of the bone-structure.

Synopsis of the eighteen chronic cases shows that in eight instances the caries was very deep, being limited by the walls of the mastoid antrum. The apophysis was sclerosed in three cases. In one case a portion of the cochlea was thrown into the auditory canal. In six cases the caries had attacked the entire apophysis, excepting that the cortex was perforated by a fistula in only two of these six cases. In three cases there was found a central caries—*i. e.*, a caries covered by a cortex entirely sound, and not communicating with the middle ear. The effect of the operation on the suppuration of the middle ear in these chronic cases was, a cure in 56 per cent., and a continuation of the discharge in 44 per cent.

During the operation, in six cases the dura mater was visible at the bottom of the wound. In two cases abundant hemorrhage from the lateral sinus occurred. One of these patients died suddenly on the seventh day, in the midst of a perfect convalescence apparently. In the other five entire recovery took place. In one case a large epidural abscess was opened with success. In seven cases (23 per cent.) irrigation demonstrated a communication between the wound and the tympanic cavity. In the other twenty-three cases (77 per cent.) no such communication existed. One death occurred in the first seven cases; in the others three were cured, while the suppuration of the tympanic cavity continued in three. In the twenty cases without communication with the tympanum, eleven were cured as to the chronic suppuration from the drum-cavity, while in nine it continued. After the operation the treatment consisted in irrigation with bichloride solutions, after which the wound was packed with iodoform gauze and iodoform cotton-wool. As a rule, the dressings were changed every six or eight days. In two cases erysipelas developed. The cause of death, in the one fatal case, was attributed to embolism of the pulmonary artery, but could not be ascribed to the operation itself.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF
J. SOLIS-COHEN, M.D.,
OF PHILADELPHIA.

PRIMARY INFECTIOUS PHLEGMON OF THE LARYNX.

DR. ERNEST GERMONIG, of Trieste, reports *Wien. Klin. Woch.*, Dec. 6, 1888, the case of a woman thirty-seven years of age who took cold in washing the floors of a number of rooms. The patient was hoarse, and she had been unable to swallow water for three days; each attempt producing intense suffering, as could be seen by the painful contortions of her face. The pharynx was normal and so were heart and lungs. There were no glandular swellings. The temperature was 39° C. The epiglottis was enormously swollen and transformed into two tumors, from the centre of each of which a purulent

mass protruded. Cocainization and an attempt to press out the pus produced such immediate relief that the patient could readily drink some water and milk. The next morning she complained of intense pain in the right shoulder, and pyemic pleurisy and pericarditis soon followed. On the morning of the third day she died, consciousness remaining to the last. Thick green pus was found in the epiglottis extending through the entire submucous tissue to the cartilage. There was no other change in the larynx save redness. Purulent exudation was found in the pleuræ and pericardium; and the liver, spleen, and kidneys were swollen. No bacterial examination was made.

THE TREATMENT OF CHRONIC PHARYNGITIS.

In an admirable article by PROF. B. FRÄNKEL, of Berlin (*Therap. Monats.*, Nov. 1888), stress is judiciously laid upon individualization of treatment to suit individual cases, instead of routine measures adopted for universal use. Thus treatment suitable for hypertrophic cases injures atrophic cases, and *vice versa*, while the management of the transitional stages demands an experienced judgment. Precedent disease of the naso-pharyngeal region and of the nasal passages requires topical treatment at the same time; and its relief by such measures is sometimes followed by spontaneous recession of the morbid processes in the oropharyngeal region. At the same time it is incorrect to attribute general pharyngeal catarrh to precedent disease of the nose and of the naso-pharynx, as has been so much urged by several American writers.

The first indication in treatment is that of the cause. Hence, obstructions in the nose must be combated to restore nasal respiration, and disorders of the mouth and teeth must be corrected. The surroundings of the patient must be modified when at fault, as well as any injurious avocation, habit, or mode of diet or of living. Proper clothing and underclothing are necessary to secure immunity from susceptibilities to cold. As to constitutional treatment, little is to be expected, but change of climate is often of great benefit.

Topical treatment is of chief importance, even in health resorts. The choice of topical agents, and the proper methods of employing them, are carefully detailed.

HEMORRHAGE OF THE LARYNX IN THE COURSE OF A CHRONIC LARYNGITIS.

MICHAEL PLESKOFF relates (*Münchener med. Woch.*, Dec. 4, 1888) an instance in a male teacher, forty-four years of age, who had had severe cough with expectoration for many years. The expectoration had been bloody on several occasions for two weeks. There was the ordinary diffuse redness of the vocal bands common to chronic laryngeal catarrh. In the region of the left vocal process near the ventricle was an elongated, submucous circumscribed blood-red patch covering half the breadth of the vocal band, evidently due to rupture of a bloodvessel. The treatment consisted solely in suppression of the voice; and the absorption of the suggillation ensued in three weeks.

DR. SCHEDE exhibited, Nov. 20, 1888, to the members of Aertzlicher Verein in Hamburg (*Münchener med. Woch.*, Nov. 27, 1888), a woman from whom he had removed the larynx, four and a half years previously, for carcinoma. Tracheotomy had been performed in April, 1884, and the laryngectomy in

the following June. In October a small recurrence in the cicatrix had to be removed. Since that time the patient had remained well, and was able to do her housework. She wore a Brun's chimney canula, and spoke with a distinct falsetto voice.

He reported, further, that his first case died of pneumonia thirty months after the operation, and there had been no recurrence—the patient had been able to resume fully his professional labors as a dentist; that a man fifty-five years of age, on whom he had operated, died one year later from a local recurrence; and another, aged sixty-five years, died two years after operation from an inoperable gland carcinoma of the neck.

DR. VINCENZO OMBONI relates in detail (*Annali Univ. di med. e Chir.*, Aug. 1888) a case of extirpation of the larynx, with the first wing of the trachea, a portion of the pharynx, and the cervical and a portion of the mediastinal portion of the œsophagus of a woman forty-six years of age with epithelioma. The operation occupied four and three-quarters hours; but was practically bloodless, owing to the use of about 150 ligatures and the liberal use of the thermo-cautery. The trachea was divided with the thermo-cautery in four-fifths of its extent, its lower portion secured to the inferior margin of the cutaneous wound, and the posterior fifth was then severed with the thermo-cautery. The patient did well for a time and wore an artificial larynx; but was attacked with erysipelas on the thirtieth day, and died eleven days later.

TUBERCULOSIS OF THE NASAL MUCOUS MEMBRANE.

DR. HAJEK reports (*Wien. klin. Woch.*, Dec. 6, 1888) the following instance: A gold-beater, aged thirty years, applied to Schnitzler with bloody discharge from the nose. An ulcer was seen in the cartilaginous septum, and a tumor in the naso-pharyngeal space. Hajek removed the growth with the snare, and found bacilli in an ulceration at its summit. He then cut large sections from the ulcerated tissue and found bacilli in their deeper portions. The parts were treated by scraping, followed by frictions with lactic acid. Complete cicatrization in five weeks. Return of patient four weeks later with a tumor the size of a hazel-nut obstructing the right nasal passage almost completely. Excision and frictions with lactic acid again successful. Several weeks later appeared some gray nodules, which were found to contain bacilli. This continuous recurrence renders the case of grave prognosis.

DISEASES OF THE NOSE AND ITS ACCESSORY CAVITIES AS A CAUSE OF RESTRICTED FIELDS OF VISION.

DR. ZIEM (*Berlin. klin. Woch.*, Sept. 10, 1888) refers to some instances of diminished field of vision due to intranasal diseases and to suppuration of the sphenoid cells, and of the maxillary sinus; one of the latter being reported in minute detail. He does not refer this condition to reflex influence from the nasal obstruction as many other observers have done, but to diminished aspiration of blood to the lungs and consequent disturbance in the venous and lymphatic circulation in the head and in the cerebrum. He is of the opinion that many other symptoms attributed to nasal reflex are to be similarly accounted for. He calls attention to glaucoma and to some other

ocular affections from the same cause, which are submitted to useless operations in consequence of a want of appreciation of their true pathology. The anatomical conditions upon which Ziem bases his opinions are fully described. Among the few cases detailed is one of glaucoma cured by trephining the antrum and evacuating the pus.

ON ESTIMATING THE SENSE OF SMELL.

DR. H. ZWAARDEMAKER, of Utrecht, describes and figures (*Berlin. klin. Woch.*, Nov. 19, 1888) a little apparatus for this purpose. It consists essentially of a small glass tube with a nozzle. This tube is covered with a tube of vulcanized rubber, or of ammoniated gutta-percha. As the latter is drawn away from the former its odor is appreciable. Having estimated the proper distance in a normal subject, the amount of ammonia is estimated by means of a scale scratched in the glass tubing.

DERMATOLOGY.

UNDER THE CHARGE OF

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THE QUESTION OF THE CONTAGIOUSNESS OF ALOPECIA AREATA.

EICHHOFF's attention was directed (*Monatshefte für praktische Dermatologie*, No. 20, 1888) to this question by the comparative increase in a period of some months of his cases of alopecia areata. While previously and subsequently his experience embraced four to six cases yearly, between April, 1884, and March, 1886—a period of two years—thirty-six cases came under his observation. An investigation of these cases led to the following:

1. In a given time there was a remarkable increase in alopecia areata cases, three to four times as many as the usual average.
2. About thirty per cent. were traceable to contagion (from barber shop), and thirty per cent. were apparently of a common, and, therefore, probably contagious origin.
3. About nine per cent. could be attributed to neurotic causes.
4. In thirty-one per cent. no cause could be found.

The author concludes that alopecia areata may have different causes, two of which, the parasitic and the tropho-neurotic, may be said to be now known and generally admitted.

CURE OF A CASE OF LEPROSY.

In the case reported (*Monatshefte für praktische Dermatologie*, No. 23, 1888) by DRECKMANN, the disease was fairly advanced, had lasted four years, and presented numerous nodes, tubercles, and patches of infiltration. There was also marked anæsthesia of the feet, legs, and hands. The mucous membrane was also involved; swelling of the conjunctivæ, a discharging ulcer in the nasal septum, whitish patches on larynx posteriorly, thickening of the left vocal cord, a small tubercle on the point of the epiglottis, and hard nodular infiltration of both tonsils. The patient, a Brazilian, aged forty-two years, was, at this time, thin, pale, and weak. The treatment, by means of pyrogalllic acid, chrysarobin, and salicylic acid, together with the internal use of ichthyol, as suggested by Unna, was instituted, and finally, in the course of several months, all vestiges of the disease had disappeared, and the patient had grown stout and strong.

The pyrogalllic acid was applied mainly to the hands, feet, and legs, in the form of a ten per cent. salve, the other parts with a salve of chrysarobin, same strength; these were applied twice daily. To obstinate nodules and patches of infiltration the same remedies were used in the form of plaster-mulls. To the face a salicylic acid and creasote plaster-mull was applied, once daily. Discrete and sharply circumscribed nodules, when conveniently situated, were excised. The conjunctival swelling disappeared spontaneously. The ulcer in the nose, the nodules on the tonsils, etc., were successfully treated with the actual cautery. The constitutional treatment consisted mainly in the administration of ichthyol, beginning with six grains daily, and gradually increasing to forty-five grains. Under the use of these measures, the writer states, an apparent cure resulted—the general health being restored, and all evidence of the disease dissipated.

[As incidental points of interest in the report, may be mentioned that the patient's wife had developed the disease eighteen years before; the wife's brother was also affected. The children, four in number, from fifteen to twenty-one years old, showed no sign of the disease. The patient's parents and six brothers, all living in the same neighborhood, were also healthy. —EDS.]

 SYPHILIS AND ECZEMA SEBORRHOICUM.

UNNA, in an exhaustive paper, discusses (*British Journal of Dermatology*, Dec. 1888) the occasional complication of syphilis of the skin with his so-called eczema seborrhoicum. He concludes that the syphilitic exanthem is so complicated:

1. Wherever the separate spots of the exanthem are of very various sizes, confluent and not sharply contoured;
2. Wherever the papules are somewhat wanting in the specific syphilitic color, and look rather of a fresh, yellowish-red;
3. Wherever perfectly smooth papules are completely absent, but where, on the contrary, the greater part of those present are covered with scales and fatty crusts;
4. Wherever the papules are found arranged in serpiginously progressive circles and rings;

5. Wherever the peculiar yellow color of the seborrhoic process is present round about the papules, and especially in the centre of the serpiginous circles;

6. Wherever the exanthem is accompanied by eczematous appearances, oozing, heat, and tension;

7. Wherever it produces itching of greater or less intensity;

8. Wherever the syphilides occur on the confines between the forehead and hair, in the naso-labial furrow, on the sternum, between the shoulder-blades, or in the sacral region;

9. Wherever they are concentrated entirely, or, for the most part, in the hairy scalp, in the axillæ, on the mons, on the genitals, about the anus; in short, on the hairy regions or places of contact;

10. Wherever the exanthem exhibits an unusual obstinacy to constitutional treatment, whilst it at once improves, or even heals entirely under an anti-seborrhoic local treatment.

The practical deduction as to treatment from the foregoing is, that whenever the coexistence of a syphilide with a seborrhoic process, or wherever a purely seborrhoic eruption exists side by side with a syphilide, the treatment must consist from the very first in the local application of anti-seborrhoic remedies, such as resorcin, sulphur, etc., in conjunction with the general internal administration of mercury or iodine.

ON THE TREATMENT OF XANTHOMA.

In the *Berliner klinische Wochenschrift*, of December 10, 1888, STERN reports the removal of patches of xanthoma by means of an application of a solution of corrosive sublimate. The growths were seated at the inner canthus of both eyes, extending slightly along the upper and lower lids. These plaques were painted with a ten per cent. solution of corrosive sublimate in collodion, necessary precautions being taken to prevent the solution getting in the eyes. The parts painted became grayish and in a few days blackish; in a short time this was cast off, leaving a slight, superficial ulcer which rapidly healed. The author states that the result was all that could be desired, without the slightest retraction of the lids.

ON THE DERMATITIS HERPETIFORMIS OF DUHRING.

In a monograph republished from the *Annales de Dermatologie et Syphilographie* (January, February, March, April, May, July, and September, 1888), BROcq discusses the subject of dermatitis herpetiformis at great length. As precursory to an exhaustive consideration of the disease from his own standpoint, Duhring's ideas are presented and his cases fully quoted. While disposed to admit the existence of a special affection having the characters peculiar to "dermatitis herpetiformis," the author would regard this term as generic, including under it several distinct varieties.

His conclusions on this point are as follows: 1. The impetigo herpetiformis of Hebra constitutes a distinct morbid entity and cannot be included in the dermatitis herpetiformis of Duhring. 2. The dermatitis herpetiformis of Duhring should be understood as a generic name serving to designate an ensemble of cases having characters in common but which can be grouped

in several distinct classes. 3. One of these classes is clearly defined by the cases reported by Duhring, and may be designated by the name "chronic pruriginous polymorphous (or multiform or pemphigoid) dermatitis with successive outbreaks." 4. Herpes gestationis constitutes a second very distinct class bordering upon the preceding—between these two types exist transitional cases. The name "recurring pruriginous polymorphous (or multiform or pemphigoid) dermatitis of pregnancy" seems appropriate to this class. 5. Certain cases described under the name of pemphigus, and in particular under the name of pemphigus pruriginosus, ought to be placed in one or the other of the two preceding classes. 6. Some reserve is necessary upon the subject of certain other cases which Duhring thinks should be classified as dermatitis herpetiformis. 7. Under the names herpes phlyctenoides (Chausit and Gibert), vesicular and bullous hydroa (Bazin), pruriginous hydroa, herpetiform hydroa (Tilbury Fox, Colcott Fox, Bulkley, G. H. Fox, Crocker, Elliot), there have been described cases of "chronic pruriginous polymorphous dermatitis herpetiformis with successive outbreaks," cases of herpes gestationis, and cases which approach these morbid types by the form of the eruption, by their intense subjective phenomena, but which differ from them in their etiology and rapid evolution. These cases which Duhring has placed in his dermatitis herpetiformis, but which he has, like the preceding authors named, wrongly confounded with the other morbid entities which have been above given, should be the subject of new research. It is impossible in the present state of our knowledge to make a well-defined clinical type or group of them, but the author thinks that such cases should be placed in a third class. He acknowledges, however, that these cases border very closely on the class "chronic polymorphous pruriginous dermatitis with successive outbreaks," and that between these two classes there are connecting transitional cases. While stating that there is as yet insufficient foundation to consider such cases as constituting the acute form of chronic pruriginous polymorphous dermatitis, still they may provisionally be grouped as such a class.

The author, in conclusion, states that excepting those which should be eliminated these cases constitute two totally distinct groups: "1. The impetigo herpetiformis of Hebra of which we have given a succinct description and which we will leave completely aside. 2. A large class of affections characterized by polymorphous eruptions, figurate, nonfigurate erythematous, erythematopapular, papular, papulovesicular, vesicular, vesiculobullous, bullous and pustular, accompanied by constant painful phenomena such as sensations of smarting, burning, intense pruritus and by an evolution of successive outbreaks. We will give these cases the name of *dermatitis*, a vague word which signifies simply inflammation of the integument, and not that of erythema which seems to us should be reserved exclusively for fugacious eruptions characterized by a simple redness of the skin; we add thereto: *a*. The term *polymorphous* or *multiform*, in order to designate better the nature of the eruption, but we would also willingly adopt that of vesiculobullous or pemphigoid. *b*. The term *pruriginous*, in order to designate the importance and constancy of the subjective symptoms.

This pruriginous polymorphous dermatitis thus understood is only a "syn-

drome;" the cases which enter therein can be divided into three principal groups:

1. Pruriginous polymorphous dermatitis with successive outbreaks, comprising: *a.* Chronic cases of very long duration which seem to constitute a well-defined morbid entity—chronic pruriginous polymorphous dermatitis. *b.* Cases of shorter duration terminating in recovery after an evolution of several months—subacute or benign pruriginous polymorphous dermatitis; this is only a simple variety of the preceding.

2. Acute pruriginous polymorphous dermatitis—the relations of which with the affections until now described under the names of vesiculo-bullous polymorphous erythemata, are of the closest kind and which constitute an ensemble of badly defined cases in which we cannot as yet distinguish very clear clinical types.

3. Recurring pruriginous polymorphous dermatitis of pregnancy (herpes gestationis), constituting a well-defined morbid type.

Finally, between each of these three principal groups, exist numerous transitional cases which seem to establish close bonds between them.

FORM OF ERUPTION ALLIED TO KAPOSI'S DISEASE AND TO PRURIGO ÆSTIVALIS ADOLESCENTIUM (HUTCHINSON).

In the case described by HUTCHINSON (*British Medical Journal*, December 22, 1888), the eruption consisted of "vesications" on the face, ears, backs of the hands, and at times sparingly over the entire body. The lesions ulcerated and left scars. It had begun at the age of two and persisted to the age of twenty, showing throughout its course a remarkable tendency to relapse in summer, and to disappear or remain in abeyance in winter. The health had never been affected, and the severity of the disease became less and less from year to year and finally disappeared. The scarring left was similar to that following severe smallpox. The affection differed from Kaposi's disease (angioma pigmentosum et atrophicum) in that there was no tendency to freckles or stigmata. Other members of the patient's family, several in number, showed no evidence of the disease.

CIRCUMSCRIBED SCLERODEMA (ADDISON'S KELOID), WITH REMARKS UPON THE ETIOLOGY OF THE DISEASE.

BISS reports (*British Medical Journal*, December 22, 1888) a case of circumscribed sclerodema (morphœa). The patient, a girl of fifteen, showed a whitish indurated patch on the right arm beginning just above the elbow, and following roughly the course of the musculo-spiral nerve. It had begun four years previously. There was muscular atrophy, but no loss of sensibility in the affected area. The patient was also subject to congenital stenosis of the pulmonary artery, which was supposed to be due to intra-uterine endocarditis of rheumatic origin. The coincidence of rheumatism and valvular lesions with this disease has, as the author states, been noted by others. The asymmetry of the lesion, its correspondence with the course of the musculo-spiral nerve, the wasted muscles being those supplied by the nerve and its branches, seemed to point toward a neurotic cause.

In the discussion, Hutchinson remarked that he did not believe that there was any connection between this disease and rheumatism, nor that it began in connection with any special exposure, but he was inclined to ascribe the lesion to some central influence brought to bear on the vasomotor nerve.

OBSTETRICS.

UNDER THE CHARGE OF

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THE DEATH-RATE AND TEMPERATURE-RATE OF MODERN ANTISEPTIC OBSTETRICS.

AHLFELD (*Centralblatt für Gynäkologie*, No. 46, 1888) finds that usage in maternities, where antiseptis is most strictly enforced, fixes 100° Fahr. as the temperature limit for the normal puerperal period. Taking seven well-conducted maternities, he finds that the percentages of patients whose puerperal periods were normal, ranged from 64 per cent. to 78 per cent. WINCKEL, in his recently published *Lehrbuch der Geburtshilfe*, considers this percentage from 71 to 76 in the best practice; in both maternities and private houses septic mortality should not exceed 0.25 per cent., and morbidity 15 to 20 per cent., taking 100° Fahr. as the limit of normal puerperal temperature. SCHAUTA, however, reports 1415 confinements at Innsbruck, with 93 $\frac{1}{10}$ per cent. normal puerperal periods, and, at times, this percentage rose to 99 $\frac{4}{10}$.

The sanitary conditions of the various maternities may explain variations in the percentages of normal puerperal periods, but the general reduction of mortality and increase in recoveries must be attributed to antiseptis.

A NURSE'S OUTFIT FOR OBSTETRIC ANTISEPTIS.

LOCHNER (*Münchener med. Wochenschrift*, No. 46, 1888), in a recent discussion upon rules for antiseptis for nurses, proposed by Winckel, expressed his belief that the hand-bag carried by an obstetric nurse should be of a material which could be boiled. He thinks bichloride of mercury a dangerous substance to give to nurses, and uses a solution of carbolic acid. He prefers wood-wool as a dressing for the cord because it allows air to permeate readily and absorbs moisture.

AHLFELD (*Deutsche med. Wochenschrift*, No. 47, 1888) describes a leather bag, for obstetric nurses, weighing, with its contents, between nine and ten pounds. It contains a metallic irrigator; a bottle of liquid carbolic acid and measuring glass; tampons of sterilized cotton and iodoform gauze inclosed in impervious paper, to be opened only when used; a minute-glass, to count the pulse, heart-sounds, and respiration; rubber sheeting three feet square; glass irrigator points or canulæ, for the vagina and rectum; nail-brush; scissors

for the finger-nails, scissors for the cord; vaseline and Hoffmann's anodyne; a bath thermometer and a fever thermometer, in cases; a female silver catheter, an English catheter; a breast pump and nipple-shield; a dressing for the umbilical cord, and a syringe for use with infants.

This costs, at Marburg, between six and seven dollars (thirty-three marks). The sides of the bag let down, and it may be emptied and thoroughly scrubbed.

ERYSIPELAS AND MEASLES COMPLICATING PREGNANCY AND PARTURITION.

COHN (*Centralblatt für Gynäkologie*, No. 48, 1888) reports a case of erysipelas upon the face and head complicating pregnancy at eight months. Premature labor ensued; the fœtus exhibited upon the corresponding portions of the head and face an œdematous, deep red swelling which gradually faded, followed by desquamation. Examination of these infiltrated tissues for erysipelas cocci gave negative results. The child died at three weeks; the cause of death was found to be multiple abscess in the kidneys and purulent cystitis; the other organs were healthy. The mother recovered.

[The editor recalls a case of erysipelas of the face and head, with premature birth; the fœtus bore no visible mark of infection, the skin was normal in appearance. Prolonged cellulitis in the mother's pelvis resulted. The fœtus died soon after birth. Runge, Kaltenbach, and Stratz have reported cases of maternal erysipelas, manifested in the fœtus by tardy desquamation; the interest in Cohn's case lies in the presence of the exanthem at birth.]

SCHRAMM (*Ibid.*) reports a case of measles at eight months pregnancy; premature labor resulted, the child dying soon after birth; no evidence of the communication of the disease from mother to child existed. The mother recovered after a severe illness; purulent otitis being a sequela of measles.

THE TREATMENT OF FIBRO-MYOMATA COMPLICATING PREGNANCY AND PARTURITION.

PHILLIPS (*Practitioner*, December, 1888) has collected 264 cases of fibro-myomata complicating labor, to which he adds 18 cases. The more radical modes of treatment are attended by a high death-rate; Cæsarean section from 84 to 69 per cent. mortality in these cases; Porro operation, 69 per cent.; Müller's ablation, 35 per cent.; myotomy, 40 per cent.; and craniotomy 52 per cent. The mortality of version and forceps ranged from 66 to 26 per cent, the forceps having a lower mortality rate than version.

During pregnancy fibro-myomata may cause severe pain, progressive emaciation, irrepressible vomiting, excessive distention of the uterus, hemorrhage, and symptoms caused by pressure. The methods of treatment available are induction of labor, reposition of the tumor, myotomy, and Müller's ablation; each case must be treated upon its own indications.

During labor, foetal malpresentations, placenta prævia, premature rupture of membranes, prolapse of the cord, and rarely uterine rupture may be caused. Fibro-myomata are often replaced in the abdomen spontaneously as labor progresses; forcible reposition is dangerous; hydrostatic pressure has been occasionally employed to replace a tumor, with good results. When fibroids

are cervical they may often be successfully enucleated during labor—through the vagina; 9 cases are mentioned, all recovered. Placenta prævia may be caused by fibroids; 6 deaths in 9 cases are reported. Interference after labor depends upon the condition of the patient, the situation and condition of the tumor, and the severity of the operation required. Accessible and pediculated fibroids may be removed to advantage after labor. Hemorrhage and septic infection are the dangers most threatening. As a rule, fibroids disappear during uterine involution.

A CASE OF UTERINE FIBROMA COMPLICATING LABOR.

TURGARD (*Annales de Gynécologie*, December, 1888) reports the case of a multipara in whom no tumor was discovered during pregnancy; face presentation existed, which was converted to occipital by manipulation. At labor, descent failed; a semi-elastic tumor, as large as a man's fist, lay in the hollow of the sacrum. Forceps were applied to the head and entrusted to an assistant; puncture with a fine trocar having failed to lessen the size of the tumor, two fingers of one hand were inserted in the vagina, two fingers of the other hand in the rectum, the tumor was pushed up, while the assistant brought down the head by forceps. Easy delivery, and normal puerperium followed; the tumor disappeared with uterine involution.

Subperitoneal fibroids are most likely to remain undetected during pregnancy, as they frequently occasion no symptoms. Diagnosis may be made difficult by softening in the tumor, which accompanies the growth of the uterus. Spontaneous version occasionally happens.

THE INDUCTION OF LABOR BY HYDROSTATIC PRESSURE.

CHAMPETIER DE RIBES (*Annales de Gynécologie*, December, 1888) has devised a rubber bag which can be distended to the size of the foetal head, firmer in texture than Barnes's and Tarnier's dilators, and attached to a supply tube. When fully distended, balloon and tube form a cone, the base of which is in the lower uterine segment. It is introduced by a curved forceps, the operator guiding it by his hand in the vagina. Several quarts of one per cent. carbolic acid solution were used in distention; vaseline, carbolated or borated, was employed as a lubricant. When fully distended, this apparatus is as inelastic as a foetal head, and rapidly provokes uterine contraction; when partially filled its action is more gradual.

It was employed in 18 cases, 14 of which had contracted pelvis of minor grade. Spontaneous expulsion of the balloon occurred in less than 12 hours; labor terminated spontaneously soon after, or was easily completed through the dilated birth canal.

RUPTURE OF THE SYMPHYSIS PUBIS DURING LABOR.

DÜHRSEN (*Centralblatt für Gynäkologie*, No. 49, 1888), at a meeting of the Obstetrical Society of Berlin, reported a case of rupture of the symphysis pubis caused by the shoulders of an unusually large female child. The breadth of the shoulders was 6.6 inches. Although the pelvis was immobilized and no general septic infection occurred, suppuration in the joint en-

sued. The abscess was opened, and under antiseptic treatment recovery followed; the joint surfaces united firmly. When general septic infection is present, suppuration of the symphysis is a dangerous complication; when infection is localized in the joint and pus is evacuated, a better union results than when no suppuration occurs.

OLSHAUSEN raised the question as to whether previous disease of the pelvic joints had not existed. There is no doubt, however, that healthy joints separate occasionally.

MARTIN had seen two cases, in the first of which rupture of the symphysis pubis and sacro-iliac synchondroses occurred at the passage of the shoulders through a moderately contracted pelvis; the shoulders were unusually large. The patient died of diphtheritic endometritis, the ruptured joints were found to have suppurated. In the second case rupture of the symphysis occurred during forceps delivery. Suppuration and spontaneous evacuation of pus followed; the patient made a tedious recovery.

GÜSSEROW thought that unusual mobility of the joints might exist giving rise to a mistaken diagnosis of rupture. He had observed so high a degree of mobility that locomotion was impossible, with but moderate pain; the patient made a good recovery. This condition may predispose to rupture.

In conclusion, DÜRRSEN believed that violent leverage-movements with forceps might rupture the symphysis. He recognized the predisposing influence of excessive relaxation, occasioned by previous difficult labors. He was convinced of the favorable prognosis of suppuration in the symphysis, without general infection, under surgical treatment.

MODERN EMBRYOTOMY.

POTOCKI (*Thèse*, Paris, 1888) writes exhaustively on the operation of embryotomy, as performed at present. In 32,938 births at the Maternité and Lariboisière there occurred 151 cases of shoulder presentation terminated in 119 cases by version; in 12 by embryotomy; in 20 by spontaneous evolution; in shoulder presentations about 1 in 4 is neglected, and demands embryotomy. He prefers Tarnier's instrument, which resembles Braun's hook, carrying a cutting blade. He reports 19 embryotomies, with 6 deaths, 1 of which was caused by the instrument.

THE TREATMENT OF EXTRA-UTERINE PREGNANCY.

The literature of this subject is becoming so extensive that space will admit of a succinct epitome only. Winckel's morphia treatment has been exemplified by GOSSMAN (*Münchener med. Wochenschrift*, No. 50, 1888), who reports a case of left tubal pregnancy ten weeks advanced, diagnosed by the presence of a tumor, pain, hemorrhage, and the escape of decidua. Injections into the tumor through the abdomen of $\frac{2}{10}$ th grain of morphia, repeated every fourteen days, resulted in the cessation of symptoms, diminution of tumor, and recovery. But one attack of pain occurred after the treatment was begun. This treatment is advised in very early pregnancy only.

VEIT (*Centralblatt für Gynäkologie*, No. 48, 1888) reports a case of double salpingitis, with total occlusion of the left tube, and lodgement of a fecundated

ovum in the right tube, producing tubal pregnancy; extirpation was performed for pain, hemorrhage, and tumor, successfully.

OLSHAUSEN (*Ibid.*, No. 49, 1838) reports a case of missed labor (fourteen months pregnancy) in which a dead fœtus at term was removed from the remains of the right tube; the sac was adherent to mesentery and intestines; recovery followed. Also, an abdominal pregnancy without sac, in which the fœtus, living and near term, lay free in the abdominal cavity. Pregnancy originated in the right tube, which burst six days before the operation without severe bleeding. Placenta and membranous fragments were removed; mother and child recovered.

BRÖSE (*Ibid.*) reports an extra-uterine pregnancy, in which laparotomy was done for pain, hemorrhage, discharge of decidua, and peritonitis. A macerated fœtus was removed from the sac; the placenta removed from Douglas's cul-de-sac, and the sac (which lined the pelvis) tamponed with iodoform gauze; adhesions were recent and abundant; recovery followed.

DÜHRSEN (*Ibid.*) operated for extra-uterine pregnancy at seven months, for the relief of ileus caused by pressure of the fœtus on the intestine. No sac was found; the fœtus lay amid the intestines, with many adhesions. The rectum was compressed by the fetal tumor. Profuse hemorrhage, and death in collapse followed the removal of fœtus and placenta; adhesions were ligated; iodoform gauze was used as tampon. Two cases of ileus caused by extra-uterine pregnancy, reported by Chevallier and Bouilly, ended fatally.

MEYER (Copenhagen) reports, in *Hospitals Tidende*, No. 30, 1888, a case of tubal pregnancy at fifteen weeks, with pain, hemorrhage, escape of decidua, and recurring peritonitis; fœtus and appendages were removed by laparotomy. Obstinate hemorrhage was checked by irrigation with boric acid solution at 122° F., and iodoform gauze tampon. Recovery followed.

FRACTURES OF THE SKULL IN INFANTS.

HENOCH (*Berliner klin. Wochenschrift*, No. 29, 1888) reports two cases of fracture of the skull in infants, followed by meningocele, encephalitis, and death. Both children were seized with convulsions when four weeks old, one lived to be five, the other three months old. In one case puncture and evacuation of the tumor were unsuccessfully performed. Although no history of violence at birth was obtained, Henoch considered both cases instances of fracture of the skull, probably at birth, with inflammation and adhesion of the meninges, absorption of the bony walls of the cranium, and the formation of meningocele.

The apertures in the skull were large enough to permit evident pulsations of the brain through the opening; the cases are rare examples of the effects of injury to the fetal skull.

A CASE OF AMELUS.

CHALMOGOROFF (*Centralblatt für Gynäkologie*, No. 50, 1888) reports the birth of an amelus in the Moscow maternity. The mother had previously borne two well-formed children. The amelus was a male and was totally lacking in limbs, not even rudimentary legs and arms being present; it was stillborn. Such a fœtus is extremely rare; the limbs are supposed to have been amputated early in embryonic life by amniotic bands.

GYNECOLOGY.

 UNDER THE CHARGE OF

 HENRY C. COE, M.D., M.R.C.S.,
 OF NEW YORK.

 THE ENUCLEATION OF SUBMUCOUS OR INTRAMURAL MYOMATA BY
 LAPAROTOMY.

FRÄNKEL (*Archiv für Gynäkologie*, Bd. xxxiii. Heft 3) contributes an elaborate paper on this subject, arriving at the following conclusions:

1. Enucleation of fibroids of the corpus uteri should only be attempted when we are confident that the operation can be completed. The prognosis is favorable if the tumor is not too large and does not project too far toward the exterior of the uterus, and the cervix is well dilated.

2. In the case of larger, single subserous fibroids, where the cervix is long and rigid, it is better to enucleate the tumor according to Martin's method. If after opening the abdomen a number of small tumors are found, supravaginal amputation should be performed.

3. Fibroids which protrude from the cervix may be shelled out through an incision in the wall of the uterus, the cervix being temporarily constricted with a rubber cord, the case being treated as if it were one of ordinary Cæsarean section, or, if there are multiple fibroids, the entire mass may be amputated as before.

4. Sloughing fibroids should be removed completely per vaginam; partial removal is to be condemned.

5. Sloughing, submucous fibro-miomata should be treated by supravaginal amputation of the uterus, the stump being secured outside of the peritoneum.

6. Sloughing tumors which protrude into the vagina, but are too large to be enucleated through this canal, should be removed with the uterus as before.

 THE SURGICAL TREATMENT OF RETROFLEXION WITH FIXATION.

BODE (*Centralblatt für Gynäkologie*, January 19, 1889) proposes to approximate the fundus uteri to the abdominal wall, after separating the adhesions, by shortening the round ligaments within the abdominal cavity. His method is as follows: After the uterus has been replaced, the round ligament on one side is picked up at a sufficient distance from the cornu to take in the "slack" of the cord, and is transfixed with a needle carrying a silk suture; the suture is then passed through the cornu at the point of origin of the ligament, thus taking a reef in the latter sufficient to exert such traction upon the fundus uteri as to keep the organ in a position of anteversion. The writer does not favor Sänger's method of ventro-fixation, since the uterus is placed under abnormal conditions. In his experience the patients suffered dragging pains in the cicatrix, which are absent when the modification of the Alexander-Adams

operation, that he proposes, is adopted, although the fixation under the former method is doubtless more permanent. He expects to publish his results, which have been successful. [DR. W. GILL WYLIE, of New York, has proposed and practised a similar method of shortening the round ligaments within the abdominal cavity, by folding them up and suturing the folds together at a short distance from the uterus.—ED.]

THE SEPARATION OF PERITONEAL ADHESIONS, AFTER SCHULTZE'S METHOD.

REICH (*Ibid.*), replying to a criticism by Zeiss, reaffirms his opinion that before any radical operation is performed for the cure of retroflexion with fixation, an attempt should be made to separate the adhesions by manipulation. Gynecologists have not given this method a fair trial.

GOTTSCHALK reports in the same journal three cases in which he replaced the adherent uterus in this manner. He thinks that it is better not to attempt to separate all the adhesions the first time, but to detach a few bands, and then to wait three or four days before repeating the manipulation. In one instance the patient, after the second *séance*, had severe abdominal pain and some rise of temperature, but no bad effects followed and she was allowed to leave her bed on the eighth day.

The writer believes that if this gradual method of separating adhesions was generally adopted, laparotomy for this purpose would be performed much less frequently. The interval between the *séances* varies according to the amount of disturbance caused by the manipulation; three days is the usual time. The patient should always be fully anæsthetized.

THE INFLUENCE OF MALARIA ON THE UTERUS.

LARDIER (*Lyon Méd.*, July 22, 1888), as the result of a large number of observations, claims that malaria is a direct cause of menorrhagia. Moreover, he has observed daily hemorrhages which showed a certain periodicity, recurring in one instance every evening at the same hour. Quinine had a marked action in these cases. The hemorrhages sometimes reappeared in early pregnancy, then ceased, to return during the puerperium.

FARADISM IN HYSTERIA.

DIDIER, (*Lyon méd.*, July 8, 1888) arrives at the following conclusions with regard to the value of this agent:

1. The faradic current is the best means for warding off, or cutting short, an hysterical attack. It is less reliable in hysterio-epilepsy.
2. By this agent one can distinguish between true epilepsy and hysterio-epilepsy, the latter ceasing on the application of the current.
3. If both conditions are present in the same individual, the true can thus be distinguished from the spurious attacks.
4. At the beginning of the attack, one electrode should be applied to the pit of the stomach and the other over the neck, a current of moderate inten-

sity being employed. During the attack one pole is to be placed on the neck and the other in the hand, or one in each hand.

5. Faradism, aside from its abortive action, has a positive beneficial effect upon the malady.

AMPUTATION OF THE CERVIX UTERI FOR CANCER.

VERNEUIL read an interesting paper before the Paris Surgical Society in October (*Annals of Gynecology*, January, 1889), showing the results of all his operations up to date. Previous to 1884 he had operated upon seventeen patients, each of whom survived an average of twenty-three months after the operation. During the four years subsequent to that period he had had five cases, each patient living an average of twenty-nine months. In nine of these twenty-two cases there was a recurrence of the cancer in the cervix, while in twelve the cervix remained absolutely free from disease, although one patient was under observation for seven years.

The writer lays especial stress upon what he terms "ganglionic recurrence," or subsequent development of the disease in the peri-uterine tissues, which is "beyond the reach of the surgeon." He had two deaths, one from peritonitis, due to accidental opening of the peritoneal cavity before the days of antiseptic surgery, and the other from septicæmia, resulting from the leaving in the vagina of a tampon that had been introduced without his knowledge. In one instance there was an error in diagnosis, the condition not being malignant. *Apropos* of this case, he cites one in which he examined a uterus that had been removed per vaginam as cancerous, when it was only the seat of chronic metritis.

Verneuil employs the "linear écraseur," splitting the cervix first. He thinks that partial hysterectomy by this method is such a simple and bloodless operation, the mortality of which is *nil*, that it should be preferred to total extirpation.

THE TREATMENT OF IMPERFORATE VAGINA WITH RUDIMENTARY DEVELOPMENT OF THE UTERUS BY LAPAROTOMY.

SUTTON (*Ibid.*) reports the case of a girl, twenty-two years of age, who had never menstruated, but suffered every month with severe pain in her back and abdomen accompanied with nausea. She was very despondent, and was willing to submit to any operation that promised relief. On examination neither the uterus nor the ovaries could be felt. Through the speculum no cervix was visible, but there was a small opening in the vaginal roof that admitted a probe to the depth of an inch and a quarter. Laparotomy was performed, and a rudimentary one-horned uterus was found, the right tube and ovary being normal; ripe ovisacs were present on the surface of the gland. The left ovary, tube, and broad ligament were absent. Slight pelvic peritonitis existed, especially on the right side, attributable to the rupture of the follicles and the discharge of the ova into the cavity. The patient's convalescence was normal.

The writer stated that he had met with several similar cases, but had never before been able to relieve the patient. He would in future always resort to laparotomy.

MODIFICATIONS IN THE TECHNIQUE OF ALEXANDER'S OPERATION.

KELLOGG (*Ibid.*) mentions briefly certain improvements which he has introduced. He now makes a very small external incision (never longer than an inch, often less). "The opening through the roof of the canal is a mere puncture with the point of the scalpel, not more than one-fourth of an inch in length;" into this he introduces a strabismus hook, and pushes it down to Poupart's ligament, then, when it has almost reached the floor of the canal, he turns it toward the median line and raises it up, at once bringing the ligament into view. By adopting this method the tissues are only slightly injured, and the operation is rendered so simple that the writer performs it under cocaine anæsthesia, having used ether in only three of his last forty cases. To obviate sloughing of the redundant portions of the ligaments, he ties the ends together over a leaden plate. Two silver wire sutures are ordinarily used on each side, including the skin, fascia, tendon, and proximal portion of the ligament; it is important to employ wire if ether is administered, in order to support the strain to which the cords are subjected during vomiting.

VAGINAL ALIMENTATION.

A recent writer in the *Weekly Medical Review* calls attention to the absorptive power of the vaginal mucous membrane, so that this canal may be utilized when food cannot be taken by the mouth. Vaginal may be employed to supplement rectal alimentation, or the former may be relied upon alone. The food must be digested thoroughly before it is injected. The vagina is more tolerant of food than the rectum, so that vaginal alimentation may be continued for an indefinite period.

THE PERINEUM.

MARCY contributes a lengthy paper to the *Amer. Journ. of Obstetrics* for January, 1889, in which he reviews the anatomy and physiology of the perineal body and pelvic floor, the injuries which they may receive during parturition, and the various operations that have been practised for their repair. The following original features are claimed for the operation devised by the author:

The posterior wall of the vagina is dissected away from its vulvar attachment, and the flap is held upward, while the separated fibres of the levator ani muscle and the posterior vaginal fascia are united by continuous buried sutures of kangaroo tendon, the cobbler's stitch being used. Two sets of sutures are introduced, the deeper ones including the muscles. The superficial wound is also closed by a continuous buried suture, and is covered with iodoform collodion. The parts are kept in close apposition, and the strain relieved by means of safety-pins of a peculiar shape, which are inserted external to the sutures. The same plan is followed in complete ruptures, the rectal and vaginal edges being previously united by buried sutures.

PSYCHOSES AND GYNECOLOGICAL OPERATIONS.

FILLEBROWN, in the same journal, concludes an article on this subject as follows: Psychoses may result from gynecological operations in patients with-

out hereditary predisposition. In these cases the prognosis is good. If the mental trouble does not appear within four months after the operation, it probably has no connection with it. In the majority of these cases the convalescence is abnormal. The fact that a patient is predisposed to a certain psychosis ought not to be regarded as a contra-indication to an operation. If she is actually insane, a gynecological operation should only be performed as a final resort. In recording the history of an operative case particular attention should be paid to the family history, with the view of discovering a possible hereditary taint.

THE INFLUENCE OF REMOVAL OF THE UTERUS AND ITS APPENDAGES ON THE SEXUAL APPETITE.

TAIT (*British Gynecological Journal*, November, 1888) cites a number of cases in which not only oöphorectomy, but hysterectomy, had been performed without diminishing the sexual appetite. In several women it was actually increased. The most striking evidence that the ovaries had no influence upon it was shown in the case of virgins who were operated upon when young, and afterward married and developed a full capacity. Seven cases are cited. In the discussion of the paper the consensus of opinion was on the side of Mr. Tait.

VICARIOUS MENSTRUATION.

PARSONS (*Ibid.*) reported the case of a healthy young woman, aged nineteen, who had never menstruated, but had severe epistaxis at irregular intervals. Treatment, both medicinal and electrical, was of no avail.

In the discussion on the paper, Dr. Bantock affirmed that he believed in vicarious menstruation, and cited cases. Dr. Heywood Smith suggested the term "alternating," as more appropriate than "vicarious," menstruation. Mr. Tait had never been able to find but one authentic case himself; while he did not deny that the condition might exist, he thought that medical students ought not to be taught that epistaxis in young women was a common expression of vicarious menstruation.

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ON THE ETIOLOGY OF DIPHTHERIA.

AN EXPERIMENTAL STUDY.

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PART I.

THE thoughtful student of diphtheria is early impressed, alike in his studies by the bedside, at the dissecting-table, and in the laboratory, by the indefinite conception which so widely prevails as to the nature and limitations of the disease. The difficulties with which this lack of precision invests the subject are especially felt when he is trying to get light upon its etiology. The standpoint from which these studies are undertaken can, perhaps, be best made clear by a brief statement of the views which the writer believes to be generally held in this country as to the general nature of diphtheria and its relations to diseases not infrequently confounded with it.

Diphtheria, in its more pronounced forms, is an acute infectious disease, presenting in most cases a more or less characteristic local lesion in some of the external or internal surfaces of the body. This local lesion is most frequent in the pharynx and upper air-passages, but may occur on any mucous membrane, or on the skin, or on the surfaces of wounds.

This local inflammation may find expression in a variety of ways. There may be a simple redness of the affected surfaces, which passes away leaving no trace. There may be a more or less intense catarrhal inflammation with much or little exudation, and nothing else. There may be a limited or extended superficial or deep necrosis of the mucous mem-

brane, a form of necrosis called coagulation-necrosis, in which the nuclei of the cells disappear, and the cell bodies are converted into a more or less homogeneous or granular mass somewhat resembling fibrin, so that the affected surfaces appear to be covered with a whitish or grayish pellicle or membrane. There may be, in connection with or without this necrotic pellicle, a fibrinous exudate intermingled with leucocytes, fragments of epithelial cells, red-blood cells, and granular matter.

The pellicle, or false membrane, pseudo-membrane as it is called, may be loosely attached to the affected surfaces, or so firmly adherent as to seem to form a part of the underlying tissues. Associated with all these forms of the local lesion of diphtheria are varying, but usually large, numbers of dead and living microorganisms. Disintegration and softening or exfoliation of the false membrane, with or without loss of substance of the underlying tissue, ulceration, phlegmon, œdema, and abscess, represent occasional progressive phases or complications of the lesion. The adjacent lymph-glands are apt to be swollen and congested.

It is not necessary to describe here in more detail the minute structure of the false membrane in diphtheria, nor the various minor modifications which it presents. Nor is it necessary to do more than call attention to the fact that, although the occurrence of a false membrane is very frequent in the disease and of great diagnostic importance, there are cases of genuine diphtheria in which no false membrane is formed.

It is, however, highly important to remember that, so far as its anatomical characters are concerned, a false membrane very similar to that above described is by no means limited in its occurrence to diphtheria. A pseudo-membrane may be induced experimentally in animals, as it would seem, by any agency which will deprive mucous membranes, such as that of the trachea, of their epithelial covering, and fulfil the conditions of fibrin-generation through the induction of emigration of leucocytes. It may be formed under the influence of a great variety of local irritants, such as steam, cantharides, corrosive sublimate, arsenic, sulphuric acid, ammonia, etc. It may also be formed as Huebner (1) has shown, by such a local temporary mechanical interference with the circulation in the affected part as will impair the integrity of its vascular endothelium.

Under all of these conditions, then, a false membrane may be formed essentially similar in anatomical character, so far as we yet know, save, perhaps, for the microorganisms which it contains, to some of the forms which are frequent in diphtheria. This false membrane is often called a croupous membrane, and the form of inflammation which it accompanies a croupous inflammation. It is also, unfortunately, termed a diphtheritic membrane alike whether it occurs in diphtheria or in inflammation due to a variety of other local causes.

The attempt to establish an anatomical distinction between these forms,

especially of pharyngeal and laryngeal inflammation with the formation of a false membrane, which, on the one hand, seemed to be of a purely local character, and, on the other, were associated with evidences of systemic infection; the attempt, in other words, to establish a morphological criterion for the differentiation of what is known as croup or simple pseudo-membranous inflammation of the larynx and of the pharynx from a more serious form of disease called diphtheria, was a legitimate attempt to meet an urgent demand for precision in the interests both of treatment and prophylaxis. Especially under Virchow's teaching, it was at one time generally believed that, if the pseudo-membrane had evidently encroached upon the structure of the underlying parts, so that its removal involved a loss of substance, its formation was due to those agencies which induced the disease known as diphtheria. If, on the other hand, the pellicle was superficial, it was the result of a simple local croupous inflammation, and might be due to a variety of causes. When, however, it became evident, as it soon did, that in very many cases in which a more or less extensive pharyngeal or laryngeal inflammation with a pseudo-membrane, was associated with grave systemic reaction, the false membrane was apparently entirely superficial, and could be stripped off without injury to the underlying tissue; when, on the other hand, a similar local inflammation developed with no evidences whatsoever of systemic infection, and with no tendency to the spread of the disease from one individual to another, and still it was found that there might be a close adherence, even a genuine infiltration of the underlying tissue with the false membrane: it became evident that the deep or superficial character of the lesion was a distinction between simple pseudo-membranous pharyngitis or laryngitis and diphtheria which, in fact, did not distinguish.

In the reaction which followed the loss of faith in this anatomical distinction between simple croupous and diphtheritic inflammation, the often repeated observation that cases running the ordinary course of a simple local croupous inflammation with no systemic reaction, might apparently serve as a starting-point of widespread epidemics of genuine diphtheria, led many to take the ground that every inflammation with the formation of a pseudo-membrane which was not evidently traumatic—*i. e.*, due either to chemical or mechanical injury—should be regarded as diphtheria. In other words, the view seems generally to have become prevalent that it is at least safe and wise to consider those forms of disease commonly known as simple croup or pseudo-membranous laryngitis and pseudo-membranous pharyngitis as all local lesions of diphtheria, but diphtheria in which the symptoms of general infection are sometimes well defined and sometimes very little marked or absent altogether.

Whether the material which induces the inflammation in diphtheria sometimes reaches the point of local expression through the blood-

vessels, or always from the surface in the affected region, it is not possible now absolutely to say, but both clinical and experimental evidences speak strongly in favor of the latter view.

The observations, largely clinical, but in part anatomical, which have led to the general belief that diphtheria is an acute infectious disease are too well known to need recapitulation here. If it be an acute infectious disease, the great advances in our knowledge of other diseases of this class would justify us in the conjecture that it is caused by bacteria and by some one or more particular species. Should such species, proved to stand in an etiological relationship to the disease, be ultimately discovered in the local lesions, most of the difficulties of definition which now beset our path would be largely removed. In other words, it is the etiological factor in diphtheria which we need to know in order to make those exact distinctions between it and other diseases with a similar local lesion, which the exigencies both of prophylaxis and treatment demand. When we know what causes diphtheria, then, and not till then, shall we know what diphtheria really is and how to define it. In the meantime we have to search for the etiological factor in the disease, without a more precise characterization of it than is furnished by the clinical observations in each particular case.

A large number of the older observers, in the use of the comparatively crude methods formerly in vogue, found bacteria of various forms in the membrane, and most of these seemed to belong to the group of micrococci, although bacilli are noted. But we have long since learned that the morphological examination does not suffice for the determination of a bacterial species. We must cultivate them in pure form to learn the much more definite biological features which characterize them. Not less indefinite were the results of the early attempts to reproduce the disease in animals. For the most part, the inoculation of animals, either subcutaneously or on the mucous membrane or directly into the blood, was practised with fragments of the false membrane, or with cultures from these, which, owing to the lack of proper methods, were never pure cultures of a single species, but a mixture of various forms. Under these conditions, sometimes in the animal a false membrane, or what passed for such, was produced; sometimes fatal septicæmia or local inflammatory lesions; sometimes all of these together, and sometimes none of them. But we should not forget that neither a false membrane nor septicæmia nor a simple local inflammation, nor even the simultaneous occurrence of these necessarily constitutes diphtheria.

We now know that there are many forms of bacteria which, when introduced into the bodies of animals, produce serious disturbance, marked disease, and even death. We know that some of the bacteria which are frequently present in the healthy human body, or its excretions, may, when introduced into the tissues or blood of animals, induce

disease and death. So that now-a-days, when animals are inoculated with such unknown mixtures of various kinds of germs as may be in a diphtheritic membrane and die, our interpretation of the results is much more guarded and our conclusions much less sweeping than was formerly the case.

For our present purpose, then, we may pass without detailed review the long list of patient researches on the etiology of diphtheria which preceded the formulation of the new methods of bacterial study by Koch; not because they are without value or importance, but because the vantage-ground of the modern observer is on a so much higher plane of exactness and precision.¹ It implies no lack of respect for the conscientious workers of an older period of science, that at the advent of a new and revolutionizing mode of research the earlier results should for the moment be set aside until in the light of new and rapidly accumulating facts their significance can be justly estimated.

HISTORICAL SUMMARY.

The first exact study of the etiology of diphtheria by the use of the modern culture methods was by Loeffler, in 1883 (2). At this time, after a careful *résumé* of the work which had gone before, this observer came to the conclusion that no reliable data were at hand for fixing upon any particular species of bacteria as the cause of diphtheria; nor had any of the variously modified inoculations of animals, either with the crude membrane of diphtheria or the impure cultures from it, ever induced what could fairly be regarded as real diphtheria.

It will suffice for our purpose to give an outline of Loeffler's results. Two species of bacteria were found by him, sometimes alone, sometimes together, in so many cases as to render them of apparent significance. These were: 1, a chain coccus or streptococcus; and, 2, a slender bacillus.

So far as the chain coccus is concerned, although he apparently found it present by the morphological examination, in a considerable number of cases—as well in the blood and viscera as in the false membrane—he isolated and identified it by cultures in only five cases; from the tonsils in three of them; from the heart, liver, and spleen in two; from the kidney in one. Not only the biological characters of the chain coccus, but its general effects upon inoculated animals would seem to indicate its close relationship, if not its identity, with the streptococcus pyogenes and streptococcus erysipelatos. Its local effects upon inoculated mucous membrane did not at all resemble the characteristic common local lesions of diphtheria. Loeffler is disposed to consider this species, in most cases

¹ For a *résumé* of older researches on the etiology of diphtheria see Loeffler's studies, Bibliography, No. 2.

at least, as of secondary importance—though perhaps inducing complications; but his reasons for this view do not seem to be very precise or convincing.

The bacilli of Loeffler are about as long on the average as the bacillus tuberculosis, and about twice as thick. They are frequently a little thickened or knobbed at the end. They stain readily with alkaline methylene-blue solutions. They are immobile, and do not grow at the ordinary temperature of the room. On blood-serum or on a mixture of blood-serum with beef-tea, peptone, grape-sugar, and salt, they grow readily at 37° C. (98.6° F.). They grow, also, as has since been shown, on nutrient agar, to which ten per cent. of glycerine has been added. These bacilli were obtained in pure culture from the false membranes in six cases of diphtheria. In one of these cases the streptococcus was also found. In four of them the material examined was the membrane simply, taken from children during life. By a simple morphological examination of seven other cases he found bacilli which appeared to be similar to those which he had cultivated. In the cases, however, which were examined both morphologically and by cultures, the bacilli do not seem to have been more frequently present than were the streptococci.

Cultures of the bacilli injected subcutaneously into guinea-pigs killed the animals within two to three days, producing a whitish or hemorrhagic exudate at the seat of inoculation and widespread œdema of the adjacent subcutaneous tissue. The internal organs were free from the inoculated bacilli, which were present only at the seat of inoculation. Introduced into the mucous membranes of rabbits, guinea-pigs, chickens, or pigeons, a fibrinous pellicle was frequently formed over the inoculated surface. Sometimes there were considerable general œdema and pleural exudation. On the other hand, the bacilli were not found in all typical cases of human diphtheria. They were absent in more than one-half of those examined morphologically, and in four out of ten in which cultures were made. The bacilli were not present in the fibrinous pellicles induced on animal mucous membrane either in numbers or situations corresponding to the human local lesion. They were often absent altogether. They did not seem to produce their effects on uninjured mucous membranes. They were found once in the mouth of a healthy child.

Thus while the researches of Loeffler led the way along lines which may be regarded in many respects as models for future workers, no positive conclusion was reached as to the cause of diphtheria. He concludes that while his bacilli are possibly the cause of diphtheria, the strict proof was not furnished by his investigations.

Loeffler is disposed to believe that there may be more than one kind of diphtheria; that the form of the disease in which the streptococci are present is characterized by a marked necrosis of the affected surface, while the pseudo-membrane is not prominently or extensively developed;

and, further, that the cocci enter the lymph channels and may find their way into various distant parts of the body, even blocking the smaller bloodvessels. That form of diphtheria, on the other hand, in which he finds the bacilli is characterized by an abundant pseudo-membrane which may contain the bacilli in that part which borders on the original epithelial surface.

This view, that diphtheria might be caused by different species of microorganisms, had been already urged by Klebs (3), who had observed that the bacteria common in the false membrane in the cases which he had studied in Prague were of an entirely different form from those which he found in his later observations at Zurich. While in the former cases they were micrococci (*microsporon diphtheriticum*), in the latter they were bacilli apparently identical, morphologically, with those which the studies of Loeffler led him to regard as of much significance. The bacilli are now commonly known as the Klebs-Loeffler diphtheria bacilli.

In 1884, Emmerich (4) announced himself at the International Congress of Hygiene at the Hague as the discoverer of the real germ of diphtheria. He considers the disease in man and the pigeon as identical. His bacillus is short and stout, about twice as long as broad, is apt to occur in pairs. It grows luxuriantly in ordinary nutrient gelatine at 15° C. (59° F.), not fluidifying. On potato it grows vigorously, resembling the pneumococcus of Friedländer. He claims as the result of inoculations of pigeons, rabbits, and white mice, that he produces a disease which is usually fatal; that a pseudo-membrane forms in the trachea; and that the bacteria are found in the blood and in the internal organs, especially in the kidneys. Important as these results of Emmerich may seem to be, they have not been confirmed by others, and in several particulars there appear to be such possibilities of serious error in his technical procedures that it would seem unwise to attach a definite value to them until fuller detail or control research by others has given us more positive data. At a later period Emmerich (5), while still insisting upon the importance of his alleged diphtheria bacillus, calls attention to the frequent occurrence of streptococci in the diphtheritic membranes.

In 1886, Babes (6) reports the cultivation from six cases of pharyngeal diphtheria, from eight cases of croupous laryngitis, from three cases of diphtheria after measles, from one case of diphtheria after scarlatina, and from one case of diphtheria of the conjunctiva, of the bacillus of Loeffler among others. In these cases he found streptococci associated with Loeffler's bacillus. The details of his work are not given in this report nor is there any intimation that he tested the pathogenic properties of the isolated bacilli. In view of the incomplete character of this work and of the later discovery (see below) by Loeffler and v. Hoffmann, of a somewhat similar non-virulent bacillus, these results of Babes cannot be

given much weight as evidence of the frequency of the occurrence or importance of Loeffler's bacillus in diphtheria.

In April, 1887, Loeffler (7) again made a communication upon the subject, in which he states that in ten cases in which fresh diphtheritic membranes were examined he found the bacilli in all. He also describes the occurrence in one of his cases of a bacillus very similar in its morphological and biological characters to those found in his earlier studies, but which was without effect upon animals. This he calls the "pseudo-diphtheritic bacillus."

Penzoldt (8), in 1887, as the result of a long series of somewhat rambling experiments found that he could not succeed in inducing typical diphtheria in rabbits, chickens, or pigeons by inoculation either with fresh diphtheritic membranes or with cultures from them. He sometimes obtained thick or thin, for the most part loose, pellicles over the inoculated surfaces, but these could be induced by a variety of bacteria which obviously have nothing to do with diphtheria. He gives but little detail as to the species which he isolated by culture. He emerges from his researches with a disposition to believe that diphtheria, in a clinical sense, may be due to a variety of causes.

Fränkel, in the same year, described a case, in an adult, of diphtheria of the fauces and larynx with secondary phlegmonous inflammation and pleurisy and pericarditis, from which he cultivated the streptococcus pyogenes (9). He describes another case, also an adult, of diphtheria of the pharynx and larynx with secondary ulcerative endocarditis. From the pseudo-membranes as well as from the heart lesion he cultivated the streptococcus pyogenes.

D'Espine (10) has reported the isolation of a bacillus similar to that described by Loeffler, but the meagreness of his published data prevents a definite judgment as to the importance of his observations.

Early in 1888 v. Hoffmann (11) described the very frequent occurrence—in twenty-six out of forty-five cases—on the mucous membrane of the larynx, as well in diphtheria, scarlatina, measles, and simple catarrh as in quite normal conditions, of a bacillus apparently identical with the pseudo-diphtheritic bacillus of Loeffler. That is, it was very similar in morphology and growth to the diphtheria bacillus of Loeffler, but not virulent. A careful comparison of the genuine with the pseudo-diphtheritic bacillus led v. Hoffmann to the recognition of biological and morphological distinctions by which the two forms could be recognized. With this knowledge he again set to work, and from eight new cases of diphtheria he isolated the genuine Loeffler bacilli. But these, in one case, were not at all virulent for guinea-pigs, and in the others in a much less degree than those originally isolated by Loeffler. V. Hoffmann further isolated from three cases of measles the bacillus of Loeffler, the cultures in one case being virulent to guinea-pigs, in two not. Six times

in nineteen cases of scarlatina he found Loeffler's bacilli, and these in no case were virulent. From the pharynx or larynx in eleven healthy cases he isolated Loeffler's bacillus four times; one of the cultures was virulent, the other not. V. Hoffmann seems to have made no animal experiments with the view of proving the etiological relation to diphtheria of these, Loeffler's bacilli, which he isolated. He simply tested their capacity of killing guinea-pigs by subcutaneous inoculations.

Recently, Roux and Yersin (17) have examined, partly by culture methods and partly morphologically, fifteen (?) cases of diphtheria, and state that they found the Klebs Loeffler bacilli in all. The record of their observations is so incomplete, however, that it does not appear whether or not they made cultures from all the cases. They apparently did not make use of the plate-culture method, but sowed the material from the pseudo-membranes directly upon tubes. Animal experiments were made, but were, so far as appears, comparatively few in number and apparently with cultures from but a few of the cases. These, in general, are said to be confirmatory of Loeffler's results. But as the local results of inoculations on injured mucous membranes are said by the authors, without detailed description, simply to be "false membranes," it is difficult to judge of their nature. The most suggestive part of their observations is the induction of symptoms of paralysis in animals by the injection of the fluids in which the bacilli had grown, and which had been freed from the germs by filtration. What bacteria, if any, other than those which they fixed upon as similar to the species isolated by Loeffler, developed in their cultures, does not appear, nor are such details of technique given as would inspire the reader with confidence that the cultures with which the animals were inoculated were actually pure cultures.

On the whole, the observations and experiments of these writers appear to be confirmatory of the work of Loeffler. But the records are so incomplete, and their technical procedures are of such a questionable nature and are so meagrely described, that it is very difficult to conclude whether the work is really of importance or not.

Since the perfection of the methods of staining bacteria in the tissues, a number of more or less careful simple morphological studies of diphtheritic lesions have been made, with the general result of showing what indeed had been demonstrated, even with the crude facilities of the older technique—that the diphtheritic membrane contains, as a rule, large numbers of bacteria of various shapes—the micrococcus form generally preponderating. This method also shows that the bacteria are sometimes present in the living tissue immediately about the seat of the false membrane, when this is formed, and that they sometimes are and sometimes are not to be found in the blood and internal organs.

If now we make a close summary of the actual results of the recent experimental work on diphtheria along the new lines of research, reject-

and carried on with the use of all the precautions against accidental contamination which the technical procedures formulated by Koch so admirably cover.

It has seemed to the writer wise, in undertaking these studies, not to seek to gather material for observation from a great variety of sources and from persons whose illnesses had run their course under the greatest variety of conditions, but to limit it largely to children, and especially to children which are placed under the general sanitary conditions prevalent in children's hospitals and asylums, where the cases may be closely observed from the outset and the surrounding conditions studied and more or less controlled.

Thus, while most of the cases came from one large foundling asylum,¹ in which the sanitary conditions are rather above the average in such institutions, in order to have some measure of comparison other cases were taken from other similar public institutions in other parts of New York City, and two cases occurred in private practice in one family in an adjacent town.

It will be readily appreciated, by those familiar with the details of such researches as these, that such a limitation of the problem is rendered imperative by the large expenditure of time which is required for the working out in full of any single case. Thus it was that a considerable amount of material from a number of cases of diphtheria (membranes, etc.), which was kindly placed by his colleague at the writer's disposal, was not made use of at all, partly because of the lack of time and partly because it was believed that a small group of cases fully worked out might lead to more reliable and tangible results than many only partially studied. In order, however, to avoid a misunderstanding of this selection of cases, it should be stated that material from every case of diphtheria which belonged in the group above indicated, and which came in proper condition for study into the writer's hands, was worked carefully through, and the results of all are recorded below.²

The primary task which the writer set before himself in the examination of these cases of diphtheria was, first, to ascertain, by the modern culture methods, what living microorganisms, if any, were present at and about the seat of the lesion or in the internal organs with sufficient frequency to justify the assumption that they might stand in an etiological relationship to the disease; to separate these in pure cultures, and study their life-history. Second, to learn by morphological examination of sections of the hardened and stained tissues what were the situation,

¹ These studies have extended over a period of two years, so that the cases from the large foundling asylum represent two distinct epidemics in successive years.

² I wish especially to acknowledge my indebtedness for material to Drs. J. Lewis Smith, R. Van Soutvoord, L. Putzel, C. W. Oakes, and Mr. Charles Laylbach.

distribution, and, so far as might be estimated, numbers of the micro-organisms which might be present. Third, to ascertain the effects upon animals of the inoculation of the isolated species.

It seems hardly necessary to say that in all cases plate cultures were first made, and that these were manipulated in the usual way for the separation of individual species. Gelatine, agar, agar-glycerine, and blood-serum plates were used—the agar and agar-glycerine being the most generally efficient. Save for the gelatine cultures, the temperature of 37° C. (98.6° F.) was uniformly employed for the growth. The plate-cultures were mostly made either in shallow, covered dishes or in Esmarch tubes—generally in the former. Duplicate plates were in all cases made for the purpose of control, not only in the different cases, but for each part or organ subjected to examination. With this large number of plates, it was possible to make the sowings so dilute that the very large number of bacteria usually present in material from the air-passages could be readily obtained in isolated colonies.

It seemed unnecessary for the purpose in view, except in the first cases, to do more than isolate the similar species which developed in the different cases. Thus, a large number of forms which were familiar to the writer as occurring in the air, or water, or food, or those which control-cultures from the mouths and throats of healthy children, or those not suffering from diphtheria, showed to be common and unimportant, could be ignored after such observations on their characters as sufficed for their identification. Single colonies of different species developing on the plates were also for the most part ignored in the examination, since the probabilities were greatly against such isolated forms being of any significance. The task was thus narrowed down to the investigation of those forms of bacteria which developed in considerable numbers on the plates, and especially those similar forms which were found to occur on the plates made from different cases.

The colonies of these forms which were to be studied in detail were transferred first to a second set of plates and these, if evidently pure, were inoculated into tubes. In some cases, where large numbers of forms were present, several successive transfers from plate to plate were necessary to insure purity. The examination of the plates was made in the culture-room of the laboratory, which is kept scrupulously clean by the frequent washing of its shelves and floor with disinfecting solutions, and the air-supply to which, driven in by the ventilating fans, is filtered through frequently changed layers of dry cotton. In this way the air of the culture-room is so thoroughly free from germs that aerial contamination of the exposed plates during their examination was very infrequent. Thus it was possible to follow the development of colonies on the plates, even though they might be slowly growing forms, for long periods without danger of overgrowth by adventitious contaminations.

The writer had, fortunately, been able to acquire practical familiarity with the morphological and biological characters of Loeffler's bacillus from cultures which were the direct descendants of those isolated by Loeffler himself, and brought directly from Berlin.

Large numbers of duplicate sections from the hardened tissues of all the cases were prepared, and studied with a Zeiss $\frac{1}{12}$ homogeneous immersion lens and the Abbé condenser. Some of these sections were stained with Loeffler's alkaline methylene-blue solution, some by Gram's method, and some with the simple aqueous fuchsin solution. By the use of these three methods of staining in each case, the possibility of overlooking any form of bacteria in the tissues examined was largely reduced.

Having thus indicated the scope of the work and the precautions against error, it does not seem necessary to give an account of each case in detail, but to present the results in the form of a *résumé*.

The cases of diphtheria studied were twenty-four in number.¹

CASES OF DIPHTHERIA EXAMINED.

CASE I.—*Clinical history*: Male, seven months. Feb. 8th, pertussis; 10th, diphtheria; 12th, intubation; 14th, death. *Autopsy*, twelve hours: Moderately thick and softening membrane in the trachea extending into the larger bronchi; tracheal wall at the lower end of tube eroded; broncho-pneumonia. *Bacterial examination—Morphological*: Enormous numbers of cocci, single, clustered, and in longer and shorter chains in all parts of the false membrane, particularly in its deeper layers; a few scattering, large, plump bacilli in the membrane. *Cultures*: *Streptococci*² in enormous numbers. *Staphylococcus pyogenes aureus*. A few scattering forms, the most abundant of which was a large bacillus resembling *Bacillus subtilis*. In the false membrane in the trachea, the streptococcus exceeded the staphylococcus in numbers in about the proportion of 1300 to one, while in the bronchial exudate the proportion was about ten to one.

CASE II.—*Clinical history*: Male, two years and seven months. Jan. 28th, pertussis; 29th, acute tonsillitis, temperature 105°; 30th, diphtheria, albuminuria. Feb. 2d, broncho-pneumonia; 15th, death. *Autopsy*, three hours: Dense membrane in the lower part of trachea and in the larger and smaller bronchi; broncho-pneumonia in both lower lobes; parenchymatous nephritis. *Bacterial examination—Morphological*: In the bronchial exudate, especially in its deeper layers, were large numbers of cocci scattered in clumps and in longer and shorter chains. Similar cocci were found between the necrotic epithelial cells of the mucous

¹ The writer has made a large number of simple morphological examinations of sections of the false membranes and underlying parts from other cases of diphtheria than those now to be recorded; and, while it may be said of these that the cocci are, in almost every case, the prevailing form of bacteria, yet, as the morphological examination does not suffice to identify the species, the observations serve as contributing evidence of such moderate value, in the present state of our knowledge, that it does not seem worth while to do more than merely mention them here.

² For the sake of convenience, the morphological and biological character of this streptococcus will be given in detail below.

membrane. A few chains of cocci were present in the lymph spaces of the mucosa and submucosa. A few stout bacilli were scattered through the false membrane. *Cultures*: *Streptococci* in large numbers. *Staphylococcus pyogenes aureus*. Aside from a few scattering colonies of variously shaped bacteria there were considerable numbers of a common white fluidifying yeast.

CASE III.—*Clinical history*: Umbilical phlegmon developed seven days after birth. At the same time pseudo-membrane was noticed on the pharynx, and there was considerable purulent conjunctivitis. With an increase in the amount of pseudo-membrane, and more intense phlegmonous inflammation about the umbilicus, the child died fourteen days after birth.¹ *Autopsy*: Dense firm pseudo-membrane over both tonsils and epiglottis; voluminous softening membrane in trachea and larger bronchi; broncho-pneumonia in both lower lobes with pulmonary congestion; parenchymatous degeneration of kidney; extensive umbilical phlegmon with suppuration. *Bacterial examination*—*Morphological*: Throughout the entire extent of the false membrane great numbers of cocci scattered and in chains. These were present as well in the deeper as in the superficial portions of the membrane. A small number were found scattered in the lymph spaces of the submucosa. A few scattering large bacilli were found in the membrane. *Cultures*: *Streptococci* in enormous numbers. *Staphylococcus pyogenes aureus* and *albus*. A considerable number of large, long and plump, and short plump, round-ended bacilli. Cultures from the phlegmon showed both the streptococci and staphylococci.

CASE IV.—*Clinical history*: Female, three years and eight months. April 28th, varicella; 29th, croupy; 30th, dyspnoea and cyanosis, temperature 104.8°. May 2d, broncho-pneumonia, temperature 105.5°; 4th, death. *Autopsy*, twelve hours: Abundant pseudo membrane in pharynx, larynx, trachea, and larger bronchi, firm and closely adherent above, and softening in the trachea; broncho-pneumonia in both lower lobes; parenchymatous degeneration in kidneys. *Bacterial examination*—*Morphological*: Moderate numbers of cocci scattered and in longer and shorter chains in the false membrane. *Cultures*: *Streptococci* in enormous numbers and in nearly pure culture. A few staphylococci *pyogenes aureus* and a few other scattering forms on some of the plates.

CASE V.—*Clinical history*: Female, two years and eight months. May 5th, had been two weeks convalescent from scarlet fever when a pseudo-membrane developed on the soft palate. Temperature 101°; albumin 80 per cent., granular casts. Two days later died, apparently from heart failure. *Autopsy*, six hours: Very slightly developed membrane, best formed in the trachea; moderate pulmonary congestion. *Bacterial examination*—*Morphological*: In the tracheal exudate a small number of cocci and a few stumpy bacilli. *Cultures*: *Streptococcus* colonies developed in small numbers on the plates, with a few colonies of staphylococcus *pyogenes aureus* and a few scattering forms.

CASE VI.—*Clinical history*: Female, three years. May 10th, pharynx red; 11th, scarlatina; 15th, pseudo-membrane in pharynx; 17th, diarrhoea; 20th, croupy cough, temperature 103°; 23d, weaker, dyspnoea; 25th, intubation, death. *Autopsy*, three hours: Firm pseudo-membrane

¹ This case was, in part, reported by Dr. J. Lewis Smith to the New York Pathological Society, June 13, 1888.

over both ulcerated tonsils. Pseudo-membrane in upper portions of trachea. Commencing broncho-pneumonia. Kidneys congested; parenchymatous degeneration. *Bacterial examination—Morphological*: The pseudo-membrane over the surface of the tonsils and the necrotic tissue on the tonsils near the ulcers and in the false membrane were crammed with cocci, single, massed, and in long and short chains. (See Plate I. and Plate II., Fig. 3.) The lymph nodules or follicles of the tonsils contained numerous single and chain cocci scattered between the cells. No bacteria were found by morphological examination in the kidney. *Cultures*: *Streptococci* were present in enormous numbers in the cultures from the pseudo-membrane of the tonsils and the necrotic tissue beneath it. They were also very abundant in the membrane from the upper portion of the trachea, less abundant in the softening portions below. *Streptococci* in pure culture and in considerable numbers from the kidney. *Staphylococcus pyogenes aureus*, most abundant in pharyngeal membrane.

CASE VII.—*Clinical history*: Male, two and a half years. May 24th, vomiting and croupy cough; 25th, pseudo-membrane in pharynx; 26th, temperature $102\frac{1}{2}^{\circ}$, croupy cough increasing, dyspnoea, death. *Autopsy*, thirty hours: Dense voluminous pseudo-membrane over both slightly roughened and ulcerated tonsils, over the entire larynx, and extending down to the larger bronchi; membrane softened below; commencing broncho-pneumonia. *Bacterial examination—Morphological*: In the pseudo-membrane over the tonsils, in the crypts of the tonsils, and in the necrotic tissue at the edges of the tonsillar ulcers were large numbers of cocci scattered and in short chains. A few stout bacilli in the superficial portions of the membrane. *Cultures*: *Streptococcus* colonies in enormous numbers in cultures from all parts of the membrane. *Staphylococcus pyogenes aureus* and considerable number of scattering forms. Kidney cultures showed considerable number of streptococcus colonies, and nothing else.

CASE VIII.—*Clinical history*: Female, one year. Three days before death follicular stomatitis; during next night restlessness; then collapse and death. *Autopsy*, two and a half hours: Tonsils ulcerated and covered with firm pseudo-membrane; dense, firmly adherent membrane on the posterior pharynx, upper part of trachea, and œsophagus; enterocolitis; parenchymatous degeneration of kidney; commencing broncho-pneumonia. *Bacterial examination—Morphological*: Everywhere in the membrane and in the necrotic tissue near the ulcers of the tonsils were great numbers of cocci, scattered, clustered, and in large and short chains. These streptococci were less abundant in the tracheal membrane than above. Few scattering forms of bacilli. *Cultures*: *Streptococcus* colonies developed in vast numbers from the pseudo-membrane. Kidney cultures were negative, while from the spleen pure cultures of streptococci grew. *Staphylococcus pyogenes albus* in small numbers grew from the membranes, while there were large numbers of the common "chain bacillus" of the mouth and a few scattering forms.

CASE IX.—*Clinical history*: Female, two years. May 27th, pneumonia, left side; temperature 106° . Seemed to recover. June 4th, pseudo-membrane on left tonsil. 5th, croupy cough, dyspnoea; intubation; broncho-pneumonia developed. 6th, death. *Autopsy*, twenty-one hours: Softening membrane over both tonsils; broncho-pneumonia, with pleurisy in left lower lobe. *Bacterial examination—Morphological*: In the



Portion of tonsil in diphtheria (Case VI.) showing infiltration of the tissues with streptococci, with necrotic tissue in the vicinity of the bacteria. A small portion of the invaded tissue, more highly magnified, is shown in Plate II, Fig. 3.

PLATE II.

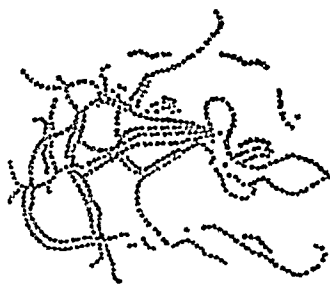


FIG. 1.—*Streptococcus diphtheriæ*; beef-tea culture:—showing the tendency of the bacteria to group themselves in pairs as well as in chains.



FIG. 2 —Edge of streptococcus colony growing on the surface of an agar-plate:—showing the loops and chains which grow out from the central denser portion of the colony



FIG. 3.—A small portion, more highly magnified, of the tissue of the tonsil shown in Plate I., invaded by the streptococcus

membrane on tonsil considerable numbers of scattering cocci and streptococci; nothing else. *Cultures*: *Streptococcus* colonies grew in considerable numbers from the membrane; also large numbers of staphylococci pyogenes aureus, considerable numbers of fluorescent bacilli (doubtless from water) and of the "chain bacillus."

CASE X.—*Clinical history*: Male, three years. May 7th, scarlatina; 11th, pseudo-membrane on tonsils; 14th, otitis; 16th, swelling under left jaw. June 1st, abscess opened behind tonsil; 7th, death. *Autopsy*, four hours: Pseudo-membrane dense and firmly adherent at the base of tongue and over both tonsils, which were ulcerated. The membrane extended over the epiglottis, completely investing the larynx to below the vocal cords, where it became softened and shreddy. Chronic and commencing fresh broncho-pneumonia. Bronchial lymph glands greatly swollen and red. Kidneys, parenchymatous degeneration. *Bacterial examination*—*Morphological*: Everywhere in the pseudo-membrane and in the necrotic mucosa beneath were vast numbers of cocci, singly, clustered, and in long and short chains. A few isolated clusters of moderately stout, long bacilli were found near the surface of the pseudo-membrane. The lymph sinuses of the bronchial glands were distended, and contained an abundant network of fibrin. No bacteria were found in the spleen, kidney, liver, or bronchial lymph glands. *Cultures*: *Streptococci* in great numbers developed from various parts of the pseudo-membrane. The spleen cultures were negative, but a few colonies of streptococci, and nothing else, grew from the kidney and liver. Staphylococci pyogenes aureus grew in considerable numbers from the membrane, and a few from the liver. Some scattering forms of colonies developed from the membrane, the most abundant of which were the "chain bacillus" and a fluorescent water bacillus.

CASE XI.—*Clinical history*: Female, three years and two months. Feb. 1st, rectal abscess; 5th, croupy cough; 6th, intubation; 7th, death. *Autopsy*, sixteen hours: Pseudo-membrane in larynx, trachea, and larger bronchi. *Bacterial examination*—*Morphological*: Moderate numbers of cocci, mostly in pairs, in the pseudo-membrane. *Cultures*: *Streptococcus* colonies grew from the membrane in nearly pure culture. Staphylococci pyogenes aureus developed in small numbers, and a few scattering forms.

CASE XII.—*Clinical history*: Female, two and a half years. Feb. 9th, croupy cough, pseudo-membrane; 11th, intubation, broncho-pneumonia; 14th, temperature 102½°; 16th, death. *Autopsy*, two hours: Pseudo-membrane in pharynx, larynx, and trachea; ulcer in trachea at end of tube; broncho-pneumonia in both lower lobes. *Bacterial examination*—*Morphological*: Large numbers of cocci, many in chains, in the pseudo-membrane; few scattered bacilli. *Cultures*: *Streptococcus* colonies in considerable numbers grew from the membrane. Also staphylococcus pyogenes aureus and a few scattering colonies of stout, large bacilli.

CASE XIII.—*Clinical history*: Female, two years and two months. Brought to the hospital with vulvitis, which developed into erysipelas about vulva. Eight days later, false membrane appeared on the tongue; then croup followed, with death in five days. *Autopsy*, two hours: Vulva denuded of epithelium, dusky red. Dense, firm, closely adherent membrane on velum and uvula; tonsils ulcerated and covered with false membrane, which extended down over the posterior surface of

the epiglottis and onward to just below the vocal cords; no broncho-pneumonia. *Bacterial examination—Morphological*: Large numbers of cocci, single, in pairs and chains, in the deeper layers of pseudo-membrane, and extending deeply into the underlying tissue, accompanied here, when in large numbers, by necrosis. Other scattering forms were abundant. Scattered clusters of slender bacilli were found in the pseudo-membrane near the vocal cords, especially in the most superficial portions. *Cultures*: In the pseudo-membrane from the tonsils, pharynx, and larynx, enormous numbers of *streptococci* in nearly pure cultures; a few staphylococci pyogenes aureus and a few scattering forms, mostly large bacilli.

CASE XIV.—*Clinical history*: Female, two months. Returned to hospital from out-nursing with bad cough, and after being for eight days in room with considerable number of children, sick and well, developed diphtheria, rapidly followed by broncho-pneumonia, with death in two days. *Autopsy*, eleven hours: Pseudo-membrane over both tonsils; on posterior pharynx and in larynx and trachea down to bifurcation membrane softening. *Bacterial examination—Morphological*: The pseudo-membrane had in many places considerably involved the superficial portions of the mucosa. Moderate numbers of cocci and streptococci in the pseudo-membrane, together with a considerable number of stout, long bacilli in the more superficial portions. *Cultures*: False membrane on tonsils, pharynx, and larynx all alike showed large numbers of *streptococci*. There were also many staphylococci pyogenes aureus and a considerable number of colonies of coarse, stumpy bacilli.

CASE XV.—*Clinical history*: Male, three years. Returned to hospital Dec. 3d. On Dec. 13th developed diphtheria; 20th, intubation; 23d, broncho-pneumonia, cyanosis, death. *Autopsy*, six hours: Tonsils swollen, not ulcerated. Small patch of pseudo-membrane on pharynx, and extending from the tip of the epiglottis to the medium bronchi, firm and closely adherent above. Congestion and commencing broncho-pneumonia in both posterior lower lobes. Cortex of kidney thick and opaque, spleen and liver appear normal. *Bacterial examination—Morphological*: Surfaces of tonsils and crypts intact, with small masses of diplococci and streptococci here and there in the crypts. In the pseudo-membrane enormous numbers of cocci in pairs and chains, especially in the deeper layers and in the necrotic tissue of the submucosa beneath. Other scattering forms were present, but none abundant. No bacteria found in the viscera. *Cultures*: Large numbers of *streptococcus* colonies developed from scrapings of tonsil crypts, from various parts of the pseudo-membrane, and from the lungs. Cultures of liver, kidney, and spleen were negative.

CASE XVI.—*Clinical history*: Male, three and a half years. Six months in hospital. Dec. 20th, croupy cough, relieved by emetic. 21st, croup symptoms continued; no pseudo-membrane seen on pharynx. 22d, died. *Autopsy*, four hours: Tonsils swollen with large pit-like crypts. Dense, firm pseudo-membrane extends from tip of epiglottis down to bifurcation of trachea; firmly attached as far down as vocal cords, below this loose. Bronchitis, but no broncho-pneumonia. Bronchial and tracheal lymph glands swollen and red. Kidneys, parenchymatous degeneration. Ulcerative gastritis and ileo-colitis. *Bacterial examination—Morphological*: In the pseudo-membrane very few scat-

tered bacteria were found. There were a few cocci, mostly on the surface, and a few short, stout bacilli. There was no necrosis of the tonsils, and but few bacteria in the crypts. No bacteria of any form were found in either bronchial or lymph glands, or in the kidney, liver, or spleen. *Cultures*: In the pseudo-membrane and tonsil crypts were found a considerable number of short, stout, round-end bacilli and several scattering forms. No streptococcus colonies developed. Cultures from the lymph glands and viscera were sterile.

CASE XVII.—*Clinical history* is wanting, save that the child, with several others in the same hospital, was suffering from measles when the diphtheria developed. No pseudo-membrane was seen in the pharynx, and the child died soon after the diphtheritic symptoms manifested themselves. *Autopsy*: Tonsils much swollen, with somewhat ragged surfaces. Voluminous, firm pseudo-membrane from the tip of epiglottis down to medium bronchi, loosened and softening below. Commencing broncho-pneumonia. Cortex of kidney slightly thickened, liver and spleen appeared normal. *Bacterial examination—Morphological*: Large numbers of cocci, streptococci, and diplococci in tonsil crypts and over the eroded surfaces. Similar forms in moderate numbers in the deeper layers of the pseudo-membrane. Aside from these, only scattering forms. No bacteria found in kidney, liver, or spleen. *Cultures*: Large numbers of streptococci from all parts of the pseudo-membrane and from the tonsil crypts, also some scattering forms. A few streptococcus colonies developed from the kidney and spleen; liver cultures were negative.

CASE XVIII.—*Clinical history*: Child, one year. Had been in hospital for six months with bronchitis. Measles developed on Dec. 24th, and ran a course of ordinary severity; croupy symptoms began early in the disease, and on Jan. 8th diphtheritic symptoms were pronounced, though there was no pseudo-membrane on the pharynx. The child died on Jan. 9th. *Autopsy*: No pseudo-membrane on pharynx, but on the larynx below the epiglottis were numerous, small, irregular, firm, closely adherent patches of pseudo-membrane; the tracheal and bronchial glands were red and swollen. Viscera not examined. *Bacterial examination—Morphological*: Large numbers of cocci, single, paired, and in chains, were irregularly grouped, especially in the deeper layers of the pseudo-membrane and sparsely infiltrated the mucosa beneath. No bacteria were found in the tracheal and bronchial glands. *Cultures*: Small numbers of various scattering forms, among which a few staphylococci pyogenes aureus were present. The streptococcus was present in large numbers.

CASE XIX.—*Clinical history*: Child, one year and eight months. Four months in hospital with diarrhoea. The child was attacked with measles of a severe form, with high temperature, vomiting, and cough. Croupy symptoms appeared on the third day, and increased steadily till the sixth, when tracheotomy was performed. Slight improvement followed, but the child died thirty-six hours after the operation. *Autopsy*: Small particles of pseudo-membrane on tonsils. Dense voluminous membrane in larynx and trachea. Cheesy bronchial glands, with localized tubercular inflammation of the lungs, and fresh broncho-pneumonia. *Bacterial examination—Morphological*: Pseudo-membrane closely adherent in places with much involvement of the epithelium, and superficial necrosis of the submucosa. Enormous numbers of cocci, single, in pairs and chains, in the deeper layers of the pseudo-membrane, in the necrotic

mucosa, and infiltrating in smaller numbers the lymph spaces of the submucosa (see Plate III.). No bacteria found in the lymph glands. *Cultures*: From the pseudo-membrane of the larynx and trachea were cultivated large numbers of *streptococci*. Besides these a few colonies of *staphylococci pyogenes aureus* and *albus*, and a few scattering forms.

CASE XX.—*Clinical history*: Child, two years. Twenty-three days in hospital with diarrhœa. Measles developed, running a severe course with high temperature. A croupy cough developed early with dyspnœa and symptoms of pneumonia. On the eighth day intubation was practised without benefit, and the child died in a few hours. *Autopsy*: Tonsils were swollen; the mouth of the crypts dilated. No false membrane was found, but both laryngeal and pharyngeal mucous membranes were swollen and intensely red. The bronchial glands were red and swollen. The lungs were congested. *Bacterial examination—Morphological*: The epithelium covering the surfaces of the tonsils and lining the crypts was for the most part intact, but here and there in the depth of the crypts small patches of necrotic epithelium were found, which were infiltrated with streptococci. A few scattering cocci and streptococci were found on the surface of the intact epithelium in the crypts. In the ventricles of the larynx and about the rima glottidis were considerable numbers of cocci and streptococci, with a few stout bacilli. The epithelium in the ventricles of the larynx was in places partially detached and necrotic, and in these regions numerous streptococci were found beneath the epithelium, and in the superficial layers of the submucosa. In this case, then, in which there was no pseudo-membrane, in two places, at least, there appeared to be a commencing invasion of the tissues with streptococci. No bacteria were found in the lymph glands. The air-spaces of the lungs contained enormous numbers of streptococci and cocci. *Cultures*: Scrapings from the tonsil crypts and from the region of the vocal cords showed considerable numbers of *streptococci*, together with scattering forms.

CASE XXI.—*Clinical history*: Child, one year and six months. In hospital six months. Measles running a severe course, with temperature 104°. Dyspnœa was developed early, and the child died twenty-four hours after the commencement of the disease. *Autopsy*: Tonsils were swollen and ragged. In the pharynx, at the base of the epiglottis, on either side, was a small, irregular patch of pseudo-membrane, dense and closely adherent. Small white-surfaced ulcers were found just below the rima glottidis. No pseudo-membrane visible elsewhere, but the larynx was of a dusky red color. *Bacterial examination—Morphological*: The bloodvessels of the mucous membrane were widely dilated. In the small patches of pseudo-membrane in the pharynx, as well as at the seat of the ulcer, below the rima glottidis, there were large collections of cocci, mostly in short chains, which penetrated the submucosa, and on either side extended beneath the intact epithelium. In the vicinity of these regions, but especially in the pharynx, there were considerable collections of cocci and streptococci lying closely packed against the surface, or infiltrating the superficial epithelial layers. In the regions where these bacteria were numerous the epithelium was either necrotic or was much thickened and peeling off in large masses. The tonsils were intact, but in the mouths of the crypts, as well as entangled in the mucus of the larynx, were a few cocci, single or in short chains, and a few scattering forms of other bacteria. In this case we seem to have the com-

PLATE III.



Section of diphtheritic pseudo membrane with submucosa, from the trachea in Case XIX. The pseudo-membrane is composed in part of inflammatory exudate, in part of necrotic mucous membrane, and both this and the submucosa are infiltrated with the streptococci.

mencement of the formation of the pseudo-membrane, and the invasion of the adjacent tissues with streptococci. *Cultures*: A moderate number of *streptococci* grew from the scrapings of the pseudo-membranous patches, together with considerable numbers of scattering forms. Among the latter were a few *staphylococci pyogenes aureus*.

CASE XXII.—*Clinical history*: Child, six days old. Developed severe umbilical phlegmon. Three days after this, diphtheria appeared, with severe local and general symptoms, with death on the following day. *Autopsy*, twenty-six hours: A dense, thick, firmly adherent membrane on the posterior surface of the epiglottis, extending down over the vocal cords and into the larger bronchi; commencing broncho-pneumonia, with much pulmonary congestion; parenchymatous degeneration in kidney. *Bacterial examination—Morphological*: In the false membrane enormous numbers of cocci, mostly single and in pairs, but many were in chains and irregular clusters. Many similar cocci were present in the lymph spaces of the submucosa and in the mucous glands of the trachea and larger bronchi. *Cultures*: *Streptococci* in large numbers. *Staphylococcus pyogenes aureus*. A few colonies of large bacilli resembling *bacillus subtilis*. Cultures from the tissues about the umbilical phlegmon revealed large numbers of streptococci and *staphylococcus pyogenes aureus*.

CASE XXIII.—*Clinical history*: Female, six years. Taken sick on Monday, with croupy cough and dyspnœa. No pseudo-membrane was visible. There was no evidence of systemic infection, but the dyspnœa increasing, tracheotomy was advised and refused by the parents. On Monday the child died. *Autopsy*: No pseudo-membrane in the pharynx. A dense, voluminous pseudo-membrane extended from the base of the epiglottis to the bifurcation of the trachea; this was firm and closely adherent above, leaving raw, rough surfaces when pulled away. Microscopical examination showed that, especially above, the pseudo-membrane had involved the external layers of mucous membrane. *Bacterial examination—Morphological*: Few scattering bacteria were present in the pseudo-membrane, mostly on the surface; these were mostly larger and smaller short, stout bacilli. *Cultures*: No streptococci and no staphylococci were found. There were two forms of bacilli in considerable abundance, one a form common in the healthy mouth, and the other a short, plump, round-end bacillus. There were three or four scattering forms, mostly bacilli.

CASE XXIV.—*Clinical history*: Female, two and a half years. Croupy cough, dyspnœa, no membrane in pharynx, but strips of membrane coughed up. Constitutional symptoms became graver; tracheotomy; symptoms of broncho-pneumonia; death on the sixteenth day. *Autopsy*, twenty-four hours: Voluminous membrane in larynx, and trachea softened and loose below; no membrane in pharynx. Commencing broncho-pneumonia. Kidney swollen, cortex white and thick. Liver and spleen normal in appearance. *Bacterial examination—Morphological*: Pseudo-membrane thickly permeated by cocci, diplococci, and streptococci, with a few other scattering forms. Streptococci in considerable numbers in the lymph spaces of the submucosa. A few in the ducts and acini of the tracheal mucous glands and in the tracheal lymph nodes; large numbers of streptococci in the tissues about the tracheotomy wound; no bacteria of any form found in the kidney, liver, or spleen. *Cultures*: *Streptococci* in enormous numbers in the membrane with

few scattering forms. Pure cultures in large numbers of streptococci in spleen, lungs, and liver. (Kidney cultures lost by accident.)

Before proceeding to study the characters and life-history of the streptococcus, to the importance of which our studies thus far seem to point, we will group the cases of diphtheria examined and briefly summarize the results.

(*To be concluded*)

ON THE USE OF HYPNOTICS, SEDATIVES, AND MOTOR DEPRESSANTS IN THE TREATMENT OF MENTAL DISEASES.

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FOUR cases out of five of recent mental disease have either sleeplessness, or active brain excitement, or morbid motor activity, as part of their symptoms at some time. The other symptoms present, mental and bodily, often seem to be of less importance than those to the patient's relatives and to his physician. Their urgency and troublesomeness seem to call for direct and immediate medical treatment in a very large number of such cases. While as physicians we fully recognize that these are symptoms, and not the disease itself, yet they all so manifestly tend toward brain exhaustion, that it is very natural to adopt means for their relief. And the most obvious medical means are the use of hypnotic, sedative, and motor depressant drugs. I do not say that such drugs are as curative as they seem, though I fully admit that their use is sometimes curative. And few practitioners but frequently find their use inevitable. The temptation to use them is sometimes overwhelming. But the dangers of using them to excess are great and numerous. I hope I am not wrong in the opinion I have formed that as they have been used they have often done more harm than good as regards cure, though it may be said that the sum total of the present relief they have afforded has been so great a boon to the sufferings of humanity, that their disuse would be a cruelty not to be thought of.

To go into their use fully in each form and phase of mental disease, in each several temperament, diathesis, and age would require a treatise, and our knowledge is not yet exact enough to enable anyone to do so. Even fully to state the principles that should guide us in their use, so far as I know them, and the risks to be guarded against would take up much time. Now-a-days most of us want to take our medical reading in a concentrated form. I have had much experience of their use and some proofs of their abuse. I have experimented carefully with many sedative and hypnotic drugs, but I find it very difficult to condense my experience, and lay down rules or principles of general application that would be of use to others.

When one considers for a moment the conditions of giving hypnotics and sedatives, it is seen how complicated those conditions are. We are giving drugs to act primarily and chiefly on the functions of the cerebral cortex, that representation of all organs, the co-relator of all functions, the differentiator of all sensations, the only true originator of the higher activities, mental and bodily, by far the most delicate and the most complex of organized structures in nature. It is the great inheritor too of hereditary qualities, good and bad, and the "seat" of mind. This governing organ, of such infinite delicacy, has gone wrong in some of its highest functions, and we send up to it through the blood course chemicals or otherwise alter its blood supply, or affect its functions by reflex influences in order to set them right. In order to have most kinds of mental disease at all we commonly need bad condition of living for many generations. The cortical protoplasm has become degenerate through its bad heredity, and is unresistive to unphysiological conditions affecting the individual, who has probably for years lived under such evil conditions. The sins of ancestry and of self at last produce their natural fruit in an attack of what we call mental disease, but which would be better named cortical disease. We then use powerful poisons in modified doses to arrest or modify cortical function. Who can think that the evil conditions of generations and the unphysiological courses of half a lifetime will be counteracted by a few doses of drugs? For we must never forget in the use of all hypnotic and sedative drugs whatsoever, that essentially they are cortical poisons and arrestors of function when given in full doses. By experimenting we have found out the doses that first stimulate and then half arrest function. But all young medical men have to learn for themselves by clinical experience the practical lesson that all neurotic medicines are in their full action poisons before they realize the fact. We use their half effects to modify nervous energizing in order that modification in one direction may arrest dangerous action in another, may stop dynamic exhaustion, and encourage trophic repair, may so diminish undue reflex excitability in nervous centres that dangerous reaction, mental and bodily, shall not take place. Such good results we try to attain while favorable conditions of life or of the *vis medicatrix* "cure" the disease. The mere statement of the problem shows its difficulties and its risks.

I would lay it down as a principle that few cases of mental disease should be treated by hypnotics and sedatives alone. They may be necessary in many cases as a part of the treatment, but there are always other indications which must be carried out to secure real and permanent recovery. To feed the patient, to restore his nervous and nutritive energy, to restore to normal action every function that is abnormal, to direct his mental working into healthy channels, to exercise his muscles and lower centres so as to get physiological and safe outlets for spare energy, to improve his controlling powers, to restore his emotional faculties by getting

him to feel natural pleasure and interest in something, to rouse his power of attention to healthy and safe objects, and by healthy and pleasant surroundings to make his environments healing—these must necessarily be our first considerations.

The questions we must always put to ourselves, when using hypnotics and sedatives, are: Are those drugs disordering any other functions, while mitigating the wakefulness and restlessness? Is the patient's mental state really improved through the sleep and quiet produced? Is the natural tendency to recover in any way interfered with? Does the patient gain or lose weight?—a most important test. If sleeplessness is the most urgent symptom, is the continued use of a hypnotic tending to restore the natural sleep habit or not? How does the patient look in the expression of face and eye after the drug sleep we have been giving him? How does he feel in the morning—refreshed or otherwise? Is the use of our drug forming a bad brain habit that it will be difficult to overcome? Is it causing a loss of the higher inhibitory power, while giving the patient present relief? There are very many cases of mental disease in the incipient stage, where what is pleasant to him is not necessarily good for the patient. There are many others where we require especially to strengthen his own volition to help his cure. An early case of melancholia that takes opium or choral may get to like these drugs so well that he will not follow out the measure that will lead to his real and complete recovery.

We need before giving such drugs to any case, first to make up our minds from the symptoms present whether it is a pure hypnotic that is needed, or a general sedative, or a diminisher of reflex irritability, or a motor depressant, or a combination of these. Different cases have such totally different symptoms in mental disease, the same person is often variously affected by the same drug at different times and phases of his malady; and the drug tolerance and idiosyncrasy are so different as between one person and another, that we have much need to select our drugs carefully for the symptom and the patient to be treated. I would put paraldehyde as the type of a pure hypnotic; the bromides and their combinations with cannabis Indica and hyoscyamus as the type of the sedatives and diminishers of reflex irritability, cerebral and spinal; hyoscyamine and hyoscyne, as the type of drugs that especially depress the functions of the cortical motor centres.

The effects we may legitimately aim and hope for in the treatment of mental diseases by hypnotics and sedatives combined with other treatment are: 1. To cut short a commencing attack of melancholia or mania in some cases. 2. To reëstablish the sleep-habit of the brain in others. 3. To tide over short attacks that have a natural tendency to recover, through making the patient manageable by nurses in an ordinary private house. 4. To enable cases with severe attacks to be kept home long enough to

satisfy patients' relatives that the attack is a "confirmed" one. 5. To give needed sleep and rest to relatives and nurses. 6. To combat temporarily dangerous symptoms. 7. To take the edge off the worse symptoms of cases who are being treated during a long attack, and so letting other measures have full effect. 8. To subdue severe and exhaustive symptoms, and so save the patient's strength and life. 9. To satisfy and soothe the minds of such patients as will have some such drug. 10. To quiet screaming or noise for the sake of others.

The most common case that has to be treated by the general practitioner of medicine is that of a man threatened with melancholia, who has the preliminary symptoms of sleeplessness, depression of spirits, want of interest in anything, and irritability with fears and, perhaps, suspicions of all sorts, who has, in fact, the general symptoms of brain exhaustion. In addition to the rest, the exercise, the change, the fresh air, the fattening, easily digested food, the tonics and nerve stimulants, and the walking we prescribe for such a case, we are justified, and frequently compelled, to try a hypnotic, if fresh air and fatigue, baths, hot and cold, massage or warm bottles to abdomen do not restore the sleep. I am not in favor of opium for such a case in however small doses, because my experience is that it diminishes the appetite, and the patient does not gain, but tends to lose in weight, while a habit and a craving are apt to be set up. Chloral I once believed in far more strongly than I do now. It is a drug, the prolonged use of which, in some cases, certainly tends toward thinness, toward a haggard look in the morning, and toward diminished mental inhibition, as shown by a habit and craving for its continued use.

The drug I have used most extensively for the past two years, and like far better than any other pure hypnotic I have ever tried, is paraldehyde. This is so valuable, so reliable, and so free from risks near or remote, that I think it cannot be too widely known by the profession. It is mainly a pure hypnotic, though I have lately seen it recommended in small doses as a stimulant, and for the vomiting of pregnancy. It acts so quickly, that often the patient is sound asleep in five minutes after getting the dose. Out of about one hundred cases in which we have used it here, it caused sickness in only two, headache and disagreeable feelings in one, and a general "discomfort" in one. It does not interfere with the appetite for food next morning, nor disturb the stomach or bowels. After a paraldehyde sleep there is no headache, no lassitude, and several sane patients to whom I have given it have said that even the refreshed comfortable feeling they have after natural sleep, is present after it. That seems too good to be true in very many instances. I have no belief in any drug sleep being quite equal to natural sleep, in being "nature's sweet restorer." I am satisfied of this important fact, however, in regard to paraldehyde, that while the first part of the sleep after a dose is drug sleep, this passes gradually into what is really natural slumber. In fact it *puts to sleep*,

and nature *continues* the slumber. Another fact of perhaps greater importance still is this, the use of paraldehyde for a time will, in some cases, restore the sleep habit of brain, and its use can then be discontinued readily, and with no felt want and craving by the patients. It is of no use, but the contrary, given through the day as a sedative. It seems to act on the very highest cortical cells, and not on the motor areas cortical or basal. In cases of mania, I often add a drachm of one of the bromides to the dose at bedtime, and in very acute and restless cases a drachm of "bromida." It sometimes excites when given in too small doses.

The proper dose of paraldehyde varies enormously according to the case. Generally, I begin with forty minims or a drachm, and go up to two drachms in ordinary cases. In very many cases of confirmed insomnia in melancholia and in acute mania, I have given three and even four drachms, and in one case six drachms. I have now a general paralytic who has taken four drachms every night for a fortnight. A lesser dose did not cause sleep. Here we commonly give it mixed with tincture of quillaya and a few drops of chloral ether in cinnamon water. Its bad taste cannot be got over, and patients always smell of it for twenty-four hours after the last dose.

I do not know how much would be a poisonous dose, but a nurse once gave a patient of mine, a small-sized woman in weak health, an ounce, with the result that she slept a stertorous sleep for twelve hours, the heart's action not being interfered with, nor the reflexes, but rousing and coffee on several occasions during the night only very partially brought her to consciousness while under its influence.

I have never seen paraldehyde affect the heart's action in any way except to strengthen it shortly after being given. I look on its action as being in some respects half-way between that of ether and alcohol, but with a far more decided hypnotic effect than either.

I have had many cases in which its nightly use for periods of from one week to six has been followed at once, on its being stopped, by a restoration of the sleep-habit. The first case of that kind I had was a recent but very marked one of suicidal melancholia with restlessness in a woman at the climacteric, who, after its use for a month, at once began to sleep soundly for six hours every night, and soon made a complete recovery. The next, and the most remarkable I have yet met with, was one of suicidal melancholia with great impulsiveness, who had not slept naturally for more than an hour or two at a time for two years. As she required a special night attendant, I knew the facts accurately. She was put on paraldehyde in drachm doses every night. This dose needed to be doubled to get seven hours' sleep. This was continued every night for six weeks. She gained in weight, and took her food well during that time. It was then stopped, and the patient at once began to sleep naturally, has never needed a draught since for a period now of eighteen months, and very

soon we were able to discontinue the special night attendant. Such a case makes a very deep impression on anyone who has the heavy responsibility of treating it. The result is in accordance with the physiology of the brain so far that we know that habits and "periodicities" are normal characteristics of its functions that can be broken or restored by outward conditions.

There are some cases of very acute mania and melancholia, and especially of the acute excitement of general paralysis, where half-ounce doses will not procure sleep, and I commonly do not push it beyond this.

One impression I have very strongly about paraldehyde after two years' experience of its use in all sorts of mental disease, acute and chronic, without organic brain disease, and in the last stages of brain lesions of many kinds, in very young cases, and in the very old, in cases without complications, in those complicated by severe diseases of the lungs and heart—and it is this: I do not think I have done any harm to any of my cases by its use. I have no feeling that it has interfered with the *vis medicatrix naturæ*, or with nutrition, or with the prospect of recovery, where this was possible. No one who has had long experience of the treatment of mental disease, but has the impression that the cases that have "run their course" to recovery under favorable conditions, good nursing, and suitable food are the most satisfactory on the whole. The "recoveries" utterly outnumber the "cures." No one who has used many kinds of hypnotic and sedative drugs extensively, but has had the feeling frequently that by the means taken to subdue present troublesome symptoms he has interfered with the "course of the case," and that recovery may have been put off somewhat. I have that feeling strongly about the use of opium and chloral. I have no such impression in any case where I have used paraldehyde. If it did no good, it did not do any harm. That is a great thing in any drug, if true. The cerebral cortex and its working in health and disease are so infinitely delicate, so intensely unstable, and so profoundly obscure, that any drug which acts strongly and directly on it, and yet does no harm, is unquestionably one to be greatly valued. Paraldehyde is so volatile a drug that it is readily and completely eliminated by the lungs and kidneys.

The use of mental and motor sedatives and depressants during the day in those forms of mental disease characterized by motor excitement is a still more difficult problem than the use of hypnotics at night. Such a use is far more liable to abuse and is essentially more unphysiological. The temptation toward such a use, for the present ends, is so great without reference to the "natural course" of the case toward recovery that we need to be very careful how we employ them. The heroic doses of antimony, digitalis, and of opium, the prodigious douches of old, we have now almost absolutely discarded. We see plainly that the motor quiet thus obtained was not half-way to cure, but part way to death. The

questions we ask now are: Can we conserve strength and prevent exhaustion and death through over-motor energy by the use of sedatives? Can we take off the keen edge of the motor excitement, so that some patients can be made more manageable and saved from being sent to asylums? Can we so diminish motor excitement that the patients can be safely taken out to walk and work, and so get rid of part of their spare motor energy in normal ways? Can we so diminish impulsiveness that danger to the patient and others may be diminished without interfering with recovery, or with health in incurable cases? Can we, during special paroxysms and bodily diseases, temporarily diminish motor action with safety. If excessive motor energy is generated in the brain cortex, it is surely a reasonable hypothesis, that it should generally get its natural outlet in muscular action. But there are limits to all excesses of action. If antipyrin, on the whole, does harm in an ordinary case of pneumonia with a temperature of 103° and prolongs recovery, it does not follow that a cold bath does not save a patient's life when the temperature is running above 106° . Patients sometimes die of the exhaustion of over-motor excitement. How do we know in any such case that if over-exertion had been controlled by drugs or mechanical restraint for a few days, the crisis might not have passed in the ordinary "course of the case."

There is, in my opinion, legitimate scope for the use of sedatives and motor depressants in mental diseases both from physiological and clinical data. Which are the best and safest measures and drugs to use? A categorical and unconditioned answer cannot be given to this question. Of one thing I am quite sure from my experience. Do not use during the day a pure hypnotic like chloral or paraldehyde alone or in combination as a sedative or motor depressant. That is the weak point of "bromidia."

Another principle which I laid down twenty years ago I still adhere to: Use the bromides in combination with nearly all sedatives and motor depressants. They make a lesser dose of the latter more equably and more safely effectual as compared with a large dose given alone. They prolong the sedative effect. They diminish motor reflex excitability in the whole of the motor centres, and they may be said to strengthen the whole function of inhibition thereby. They are very safe and do not tend to affect nutrition, but often the contrary. The combination of the bromides with cannabis Indica, which I recommended in 1868, and have used continuously since, I still think one of the best sedatives, because it is mild in general effect, and does not affect the nutrition. Patients often gain in weight during its use, they can work and walk while under its influence, and impulsiveness of all kinds is diminished by it.

My original experiments which were very carefully made, have been confirmed in the main by a very large subsequent clinical experience. Not that all my hopes and expectations of twenty years ago in regard to

the curative effects of this or any other sedative on cortical brain excitement have been realized. Few men have had to treat diseases for twenty years who are not at the end of the time more sceptical about drug treatment, and more inclined to trust to the *vis medicatrix* under favorable conditions than they were at the beginning, on the whole. There are marked exceptions, no doubt, and the use of this combination as a sedative, motor depressant, and diminisher of reflex irritability in mildly maniacal cases, in certain cases of acute mania with hysterical symptoms and noise in women, in epileptic mania not of the unconscious delirious type, in chronic mania with paroxysms of exacerbation, in all cases of brain excitement with more or less regular periodicity of symptoms, and in many cases of suicidal melancholia characterized by motor excitement and homicidal violence—in all these I have used this combination, and found it an admirable sedative without disturbance of digestive functions and without loss of nutrition in a very large number of cases. I always weigh my patients while they are taking any sedative or hypnotic drug, and if there is a continuous loss of body-weight I am inclined to stop the medicine and try how the case will run on without it. I commonly now begin with ten minims of the tincture of cannabis and thirty grains of one of the bromides for a dose, rising to forty-five minims of the former to a drachm of the latter. I commonly add some aromatic spirit of ammonia to the mixture as a cardiac stimulant, and also to keep the resin more in solution. The most alarming symptoms I have ever seen after its use in large doses resulted from the temporary failure of the heart's action in one anæmic case of chronic mania after a drachm dose of the tincture of cannabis with a drachm of bromide, and in another instance from a semi-comatose condition in a case of *folie circulaire* during the excitement which I was attempting to "keep in check" by a continuous use of the mixture. In the former kind of case I now add some digitalis. In other cases, and for special indications, I am in the habit of adding the ammoniated tincture of valerian to the combination. This does specially well where there are hysterical symptoms. I sometimes add a little lupuline, hyoscyamus, or belladonna.

The cannabis Indica often increases the appetite and acts on the kidneys. The taste of this mixture is very bad, however, and we often have much difficulty with maniacal and suspicious cases on this account. In some patients a few doses will be sufficient for the purpose we aim at, in other cases the drugs have to be given for weeks and even months. I have a case of *folie circulaire* now, who during the excited part of the cycle is a noisy, shouting nuisance in the ward, but when under the influence of this combination remains in a comparatively calm, confused condition till the quiet cycle of the disease comes on. I have certainly kept many patients out of asylums by its use. When the excitement is very intense, and tending toward "delirious mania," with dry tongue, sordes, and

repugnance to food, then I cannot recommend this combination, nor indeed any other sedative, hypnotic, or narcotic drug. Nursing, stimulants, suitable feeding, tonics, and fresh air are in these circumstances alone to be relied on, if we wish our patients to have the best possible chance of recovery. In general paralysis and the excitement of organic brain disease I have often seen the combination give great relief and quietude without any ill-effect.

The following were the chief bodily effects I observed after the use of this combination of cannabis Indica and bromide in cases of maniacal or melancholic excitement with motor restlessness: The temperature, especially the evening temperature, fell, the pulse was slightly increased in frequency and weakened in force, the weight increased through good feeding and the use of much milk and eggs, the appetite improved, the digestion and action of the bowels were not interfered with, the motor restlessness became much less marked, and in some cases motor quietude supervened. Nervous and reflex irritability were diminished, a drowsy calmness and deadened mental reflexes taking its place. The tendency to widening of the area of nervous and mental reflex irritations when excited in one area by slight irritants did not take place, as is apt to be the case in mania.

The mental results were the following: There was less sudden impulsive action, the constant talking got less, the tendency to shouting was lessened or stopped, there was less resistiveness to control, there was a drowsy quietude induced. The emotional state was one of greater happiness, and intellectually there was less suspicion. In some cases hallucinations of hearing abated. In many cases walking and working could be engaged in. Inhibition was improved.

If judiciously given in suitable cases in small doses to begin with, gradually increased until the effect we wish is produced, I estimate that good results are obtained in from sixty to eighty per cent. of them.

The following symptoms should in my judgment make us hesitate to use the combination or stop its use, viz., a very weak, thready pulse, a very foul, creamy tongue increasing under the use of the drugs, a dry tongue and mouth, an increase of motor paralysis, a difficulty in equilibration and walking, a tendency to stupor, very cold extremities and pinched face as if the general nervous and vital energy was very low and diminishing.

If a pure motor depressant is indicated, there is no doubt that hyoscyamine and hyoscine are the best drugs to get the effect of simple motor quietude. I have many cases of mania where the chief symptoms, and by far the most troublesome, are excessive restlessness, shouting, tearing, violence, and motor impulsiveness of all kinds. All the morbid energizing of the cortex seems in such cases to be concentrated in the motor centres. Such patients are always troublesome, sometimes dangerous to

others, and many of them tend to exhaust their strength to a dangerous extent. Now if any such a case is in strong and vigorous general bodily health and has a sound heart, hyoscyamine or better still hyoscyne may be tried in small doses of $\frac{1}{80}$ gr. of the former and $\frac{1}{200}$ gr. of the latter, carefully watched. The risks of their use are undoubted, but the good results in some few cases are also marked. Unfortunately, hyoscyamine produces in patients a condition of great, sometimes excessive, mental pain, for they dread its use exceedingly after having had it once. They are apt to look on it as a punishment and to resent it accordingly. For that reason and also because I once had very alarming temporary narcosis with paralysis in a strong man after using it I have given up the use of hyoscyamine. Its effects were far too like those of a club that simply knocked the patient down. But hyoscyne in doses beginning with $\frac{1}{200}$ gr. given hypodermatically and going up to $\frac{1}{80}$ gr. is, so far as I have yet used it, a safe and a moderate depressant of voluntary motion, without narcosis or much mental confusion or drowsiness. So far as I have yet observed its effects, it is the best drug for this special effect. It has not in my cases affected the appetite, nor depressed the heart's action unduly. I must say I have been afraid to push it in very restless and violent cases. Several strong persons of this kind laboring under acute mania resisted $\frac{1}{80}$ gr., and I was afraid to push it further after my experience of hyoscyamine. I should not give it in general paralysis or in any case in which I suspected organic brain disease.

I shall conclude with a few principles of general application :

1. Make up your mind clearly from the symptoms present whether your patient needs a pure hypnotic, a general nervous sedative, or a simple motor depressant before you use any of these drugs.

2. Use all such drugs experimentally in each case at first, and watch their effects not only on the higher nervous functions, but on all the organs and their functions; and on the general organism.

3. Even when there is sleep and quiet produced for the time with no apparently bad results, look to the general feeling of *bien-être*, the recuperative energy, the expression of face and eyes after their use, and see if there is any undue reaction as if some energy that must have an "outlet" were merely being "suppressed" for the time being.

4. Stop using such drugs as soon as possible, trying experimentally how the patient gets on without them.

5. Keep asking in every case, "Are we sacrificing in any degree the highest function of mental inhibition by their use?"

6. Never omit general measures for the restoration of the health, nutrition, and higher nervous functions while you use such remedies.

7. Paraldehyde is the purest and least harmful hypnotic yet introduced when the insomnia is marked and intractable. Urethan and sulphonal

cannot compare with it. Opium and chloral have special dangers and disadvantages.

8. Use the bromides as accentuators and prolongers of the effects of other drugs, and in order to be able to employ smaller doses than otherwise.

9. A combination of cannabis Indica and the bromides is the best and least harmful of general sedatives.

10. Hyoscine is the best pure motor depressant; but it needs care.

11. We never should narcotize an insane patient or one threatened with mental disease.

12. It is as dangerous to use more anodynes by the mouth or subcutaneously to relieve mental pain, as to subdue bodily pain by these means only, perhaps more so.

13. It is generally far better therapeutics to enable your patient to bear his mental pain and the effects of his insomnia by improving his general nervous tone and the nutrition of his body than merely to produce quiet and sleep by drugs.

14. It is commonly a safer thing for the patients, and tends more toward natural recovery from his disease, to provide a physiological outlet for morbid motor energy than merely to depress it directly by drugs.

15. It is almost always preferable to treat cortical exhaustion, irritability, and undue reflex excitability by rest and by improving the fattening and nutrition of the body than by continuous sedatives, the great exceptions being the treatment of epilepsy and convulsive affections by the bromides.

CAVERNOUS ANGIOMA OF THE LARYNX. REMOVAL.¹

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WITH DRAWINGS AND DESCRIPTIONS OF THE MICROSCOPICAL SECTIONS,

PREPARED BY DR. LUDWIG BREMER,
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ANGIOMATA of the larynx are exceedingly rare growths. The textbooks on laryngology mention them, but few writers claim to have seen them in their own practice. A search of the literature at my command has given reports of only six cases, viz., Fauvel (*Mal. du Larynx*, pp. 545-606) reports two cases; Heinze (*Archives of Laryngology*, June, 1880) reports one case; Elsberg (*Archives of Medicine*, February, 1884)

¹ Read at the tenth annual Congress of the American Laryngological Association, Washington, 1888.

reports two cases; Kidd (*British Medical Journal*, March, 1888) reports a case with description of the microscopic section; Mackenzie (*Diseases of the Throat and Nose*, p. 307) mentions one case of angioma of the larynx, situated on the false cord, and again (in *Essays on Growths*, p. 88) he reports a vascular tumor situated in the hyoid fossa. Of the former I can find no account, save the simple statement. The latter cannot strictly be classed as a laryngeal growth.

The case reported by Johnson, 1865, as a vascular cyst situated at the anterior angle of the vocal bands, and the case of Fournie, of a melanotic growth on the epiglottis, cannot in the absence of a definite description be classed among the angiomata.

With the exception of the case mentioned by Mackenzie, all the angiomata hitherto reported have been of soft consistency, and situated at or near the anterior commissure of the larynx.

During the latter part of August of this year, I was consulted by J. K., a man aged thirty years, a maltster, on account of a persistent hoarseness. He stated that during March of the present year he had first noticed a hoarseness, but, as it was ascribed simply to a cold, it gave him no concern. About July he began to notice an impediment in his speech; the voice would break suddenly at times, and a short cough or the act of swallowing would be necessary to clear it. He had no other symptoms, and his general health was perfect.

When I first saw him, his voice was hoarse and slightly marked by the broken tremor recognized as tumor voice. There was no dysphagia, dyspnoea, or cough. On laryngoscopic examination, a grayish-brown mass, the size of a large pea, was seen attached to the anterior part of the left vocal cord—the tumor was lobulated; a portion reached the commissure and another portion was attached by a pedicle to the surface and edge of the cord; this permitted it at times to fall below the cord and to be partly hidden from view on phonation; a short cough would always bring it between and above the cords. The glistening œdematous appearance of the cord about the growth, corresponded in a striking manner with that so well described by Kidd in the report of his case.

After the application of a twenty per cent. solution of cocaine to the larynx, the greater part of the growth was removed in a mass with the Schroetter tube forceps; it proved to be very soft, and the hemorrhage was no more than that following the removal of an ordinary blood-cyst, scarcely a small teaspoonful altogether. The base was cauterized, and the patient soon regained the control and tone of his voice. After a lapse of four months, there has been no sign of recurrence.

The portion removed was submitted to Prof. Ludwig Bremer, of St. Louis, and the accompanying drawings, microscopic sections, with a full microscopic description of the tumor, were prepared by him.

I feel fully assured that these microscopic specimens are unique in their beauty, and the description of the microscopic appearance of the tumor is the most complete in its details of any yet placed on record.

The slide with the microscopic section is now in the National Museum at Washington.

The tumor is about the size and form of a large pea; its base is somewhat flattened. Its color is bluish-gray flecked with small bright red spots at the apex. The surface of the latter is glistening and polished, whereas that of the sides of the tumor is slightly roughened and velvety. This difference in appearance is explained by the microscopical examination as follows:

At the apex the epithelial covering is very much reduced in thickness owing, no doubt, to friction and pressure from an opposite surface; in places it has entirely disappeared, being replaced by dense fibrous tissue. The red spots are small hemorrhages.

Sections made vertically to the base through the whole thickness of the tumor, reveal the following facts:

In the unstained specimen a number of reddish-brown spots are visible, embedded in a transparent tissue. The spots give, on coarse inspection, the impression of being hemorrhages into the mass of the tumor. Examined with a moderately high power ($250\times$ — $300\times$), it is seen that in reality they are made up of blood and a network of trabeculae varying in thickness, the whole being surrounded by a more or less circular ring of connective tissue.

Sections stained in fuchsin, dehydrated in alcohol, and preserved in Canada balsam, show the following under a low power (Bausch & Lomb, A 1 in.): About one-half of the whole tumor-mass appears in the field; its periphery is undulating. The uppermost layer of the epithelial covering is stained deep red, the rest pale violet. The thickness of this cover is variable; in some places it is hypertrophied. In one spot it is undergoing mucoid degeneration, the cells being very much swollen, their contours only visible, of oval shape, the nuclei gone. The color of the bulk of the tumor appears, on the whole, reddish-blue, excepting the blood, which is stained yellow, and a number of spots in the centre of the tumor, which look intensely red. Here, as will be seen further on, is the centre of nutritive activity.

Examined with a higher power ($300\times$), the sections present a variety of structures in different parts, alveolar reticular, myxomatous, and fibrous. What appears macroscopically as hemorrhagic foci, looks now like organized thrombi, in which trabeculae of variable thickness, dividing and subdividing, are seen to form a network, the meshes of which are, on the whole, elongated in form. These meshes are filled with red blood-corpuscles; occasionally a white one is visible. The septa, especially the more voluminous ones, are beset with what appears like endothelial cells.

The stroma surrounding the blood-containing network is made up of dense fibrous tissue, from which the trabeculae are seen to emerge and branch out; in other places, however, the fibrous rings are not so well defined, the network becoming more and more narrow-meshed at the periphery, and passing gradually into the dense stroma.

A very peculiar appearance is presented under a high power (about $350\times$ — $400\times$) by the intensely colored central portions referred to above. In fuchsin preparations which have been bleached by the prolonged action of alcohol, very large spindle- and star-shaped cells are seen to arrange themselves into a network containing red blood-corpus-

FIG. 1.



Three contiguous alveoli. *a*, centre of greatest activity: formation of network by large spindle- and star-shaped cells. *b*, formation of mature connective tissue. *c, c, c*, blood corpuscles. *d*, accumulation of leucocytes: possibly an inflammatory focus. $\times 300$ reduced.

FIG. 2.

FIG. 3.

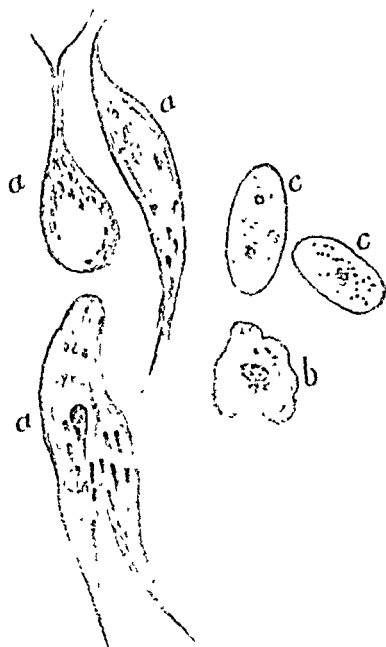
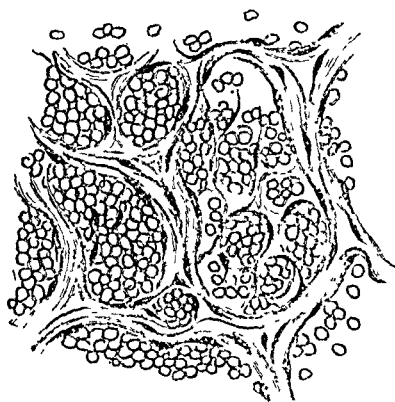


FIG. 2.—Portion of the tumor showing voluminous connective tissue, trabeculae, and comparatively small alveoli. The larger alveoli are subdivided into smaller ones and lined with endothelia. $\times 300$.

FIG. 3.—Giant spindle-cells. *b*, a spindle cut across. *c, c*, large nuclei with invisible protoplasm; probably the juvenile stage of the spindles. $\times 300$, Leitz 1-12th immers. Oc. 1.

cles. A part of these *giant-spindles* are in a state of transition into connective tissue, after the fashion of fibroblasts, their voluminous protoplasmic branches passing gradually into the mass of the neighboring fibrous stroma (Fig. 3 and Fig. 1 a).

Wherever the alveolar arrangement predominates, the trabeculae forming the blood-spaces are lined with distinct cells, serving as endothelia. The meshes are of all sizes, some of them so minute that, on a plane, they contain only three or four red blood-corpuscles (Fig. 2).

In some few parts of the tumor, the myxomatous character predominates in structure; always, however, with a tendency to pass into the fibrous state. It is at the periphery of the myxomatous patches where the transition stage can be easily seen. (The myxomatous formation may, however, be interpreted as a degenerative process, especially since the large granular cells in the meshes are missing. This point I leave undecided.)

On the whole, a tendency prevails throughout the tumor to form firm fibrous tissue, which points to a benign nature. The histogenetic features are clearly indicated in the deeply stained central parts. Here the large branching cells develop, uniting with each other by their protoplasmic offshoots, thus resembling myxomatous tissue. A connection with the previously existing blood channels is established, and now one of two things may happen. Either the branching cells are excessively nourished, passing into fibroblasts, and in this case the meshes are small, containing very little blood, the tendency being toward their complete obliteration and the formation of mature connective tissue; or the pressure of the blood may be so considerable that the trabeculae formed by the protoplasmic connections of the branching cells remain comparatively thin, the blood predominating over the stroma. The tumor in general resembles a sponge; it is a cavernous growth. Nowhere are there true bloodvessels to be seen; nowhere smooth muscle-fibres indicating the presence of true bloodvessels. The diagnosis is "cavernous angioma."

ON THE OPERATIVE TREATMENT OF STRUMOUS ARTHRITIS OF THE KNEE.

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THERE are at present in the wards of the Edinburgh Royal Infirmary under my charge, five cases of strumous arthritis of the knee. They have been operated upon, and their wounds have all healed without the formation of a single drop of pus. One is a woman, aged twenty-five years, whose limb I have amputated above the knee; three are cases of excision, aged fifteen, twenty-three, and twenty-seven years; and one is a child, three years of age, in whom I have cut away the diseased synovial membrane. They are, therefore, typical of the varieties of operative treatment for strumous arthritis, and may serve as text for a few practical observations.

In a preliminary way, I would strongly emphasize the proposition that strumous arthritis is eminently curable. Tubercular disease, if it does not attack vital organs, generally is so. In the struggle for existence between the elemental tissues of the body and the intrusive bacillus the latter is often worsted.

The study of the conditions which favor one or the other of these antagonists is of the profoundest interest to the clinician, and, without depreciating other factors, we may take for certain that one essential, or at least invariably applicable, condition of successful treatment, so far as surgical and probably also medical forms of tubercular disease are concerned, is the enforcement of absolute rest. It would be interesting, but not germane to our present subject, to speculate on the *modus operandi*, and to inquire how rest, which leads to atrophy of the tissues of the body, should at the same time enable them to destroy the vitality of the intruders. It may be that in the effete products of work microbes find a suitable soil. Suffice it, however, that rest *is* effective, and that, if made absolute, or, as it is called, physiological, it rarely fails to cure.

But, while this is so, the difficulty of applying it in any adequate way is sometimes very great. In certain parts of the body it is impossible, although I venture to maintain that often, as, for example, in strumous glands, the possibilities are not sufficiently utilized by the surgeon. In the poor, again, as compared with the rich, the necessary time is not at our disposal. Among the upper classes the rarity of operation for strumous disease is largely due to the fact that immobilization can be maintained over a sufficiently prolonged period of time.

It is a common history among our hospital patients, that steady improvement continues so long as they are kept in the infirmary, and that relapse occurs on their resumption of the work that they must perform in order that they may live. After, it may be, frequent repetition of this alternation, an abscess forms and opens. The too common sequel is that, having opened, it becomes septic; having become septic, the disease makes more rapid progress than before.

There can be no doubt that the influence of the different forms of microbes upon each other is very various. Some are antagonistic. There is an antagonism between the microbe of erysipelas and that of tubercle. Fehleisen has shown it in lupus. I have observed it in strumous arthritis. I have before me the case of a boy in whom I excised the elbow. Septic at first, it remained so after operation, and, notwithstanding scraping out of the sinuses on more than one occasion, they would not heal, and persistently exhibited characteristic strumous granulations. One day he came to the infirmary, and was sent to the Contagious Hospital on account of erysipelas. With the subsidence of the erysipelas the sinuses quickly healed. The case is not isolated in my experience, and I have myself no doubt of the antagonism. On the

other hand, the microbes of putrefaction and tubercle are adjuvant to each other in the human body. If a strumous arthritis become septic, the prognosis becomes at once most serious, and the too frequent result is exhaustion, hectic, amyloid degeneration, and death.

Such, then, is the common history of a hospital patient with strumous disease of the knee. I do not deny that the disease may be arrested spontaneously, even in the poor, at any stage of its progress. But with them it is a dangerous disease, and we have often to consider what measures should be taken when rest fails, either because it cannot be adequately or long enough applied, or because the important hygienic adjuvants are wanting. These circumstances naturally, also, may determine the sequence and period of application of these measures, both in relation to rest and to each other.

If, then, rest fail from one cause or another, surgery has three operative resources. I say nothing of simple incision. If it be time to incise in strumous arthritis of the knee, it is time to go further, for its curative value is less, and its risk nearly as great, as that of other operative measures.

The three operations are:

1. Partial excision..
2. Complete excision.
3. Amputation.

Let us take them in that order.

Partial excision is a method of operating of ancient date, rendered obsolete for a time by complete excision, but recently revived in improved form under the name of arthrectomy. The reason for the revival is the increased safety which is given to it by the antiseptic system. That system has so reduced the mortality of all these forms of operation as to make it an element of much less importance than it was formerly in determining the choice between them.

Arthrectomy, then, or partial excision, consists in the removal of all palpable and obvious portions of diseased texture, whether in synovial membrane, or elsewhere, without regard to what is left, provided only it be apparently sound. That, I think, is a not unfair description of the operation, and I use the words palpable and obvious, because no one, I suppose, will contend that it is possible, in such an operation to insure, or even render probable, the removal of all texture in which the tubercle bacillus exists.

Two advantages are claimed for this operation. It is asserted, and with some truth, that, unlike the other methods of operating, it does not interfere with the growth of the limb. This advantage, of course, applies only in the case of children. But it must not be forgotten that arrestment of growth is often the effect of the disease. A very frequent situa-

tion for the development of tubercle is the epiphyseal junction, and a common result is the ossification or destruction of the point of growth.

A second advantage has been claimed for arthrectomy, that mobility of the joint can be thereby preserved. There is in my wards at this moment a young woman on whom I operated nearly three years ago, by removing with scissors and sharp spoon the whole of the gelatinized synovial membrane of the knee-joint. The wound healed by first intention, and, till three weeks ago, she has been able to walk about and freely use her knee without pain up to a right angle. She has come back now because of a little pain from prolonged standing and walking, which has completely subsided with a fortnight's rest. About the same time, in a child, I erased a large part of the external condyle of the femur and the whole of the synovial membrane. It required long rest in splints, but for a year and a half she has been walking about without pain and with slight but useful movement of the knee. I look upon them, however, as quite exceptional, and I think that all arthrectomists now advocate prolonged rest after operation, and aim at ankylosis, if not osseous, at least as firmly fibrous as can be obtained. And undoubtedly they are right in so aiming. There are great risks in a remanent mobility. I have, in one instance, been obliged to excise the joint in a little boy on whom, a year and a half previously, arthrectomy had been performed by another surgeon. There had followed complete cure of the disease, and the ankylosis was so firmly fibrous that it was only with care that any movement could be detected. Nevertheless, under the strain of walking the knee had gradually become more and more bent, until it was nearly at a right angle, and the patient could only walk on his toes. Moreover, sudden strains or falls were apt to produce severe pain, lasting on each occasion for a day or two. Therein, in truth, lies an important difference, so far as the after-consequences of both arthrectomy and excision are concerned, between a prehensile organ like the arm, and one meant to bear weight like the leg. Fibrous bands will stand much strain in the way of direct tension, but little in the way of pressure or lateral jerk.

Another disadvantage of even very slight remanent mobility lies in the fact that it greatly increases the chance of recurrence of the disease. After excision of the knee, if osseous union occur, the disease is cured; and of a large number of such cases I have met with only one in which the disease recurred. I excised the knee in a lad of eighteen years, a patient of Dr. Young, of Addiewell. Osseous ankylosis followed, and, for more than a year, the limb was perfectly sound and useful. He was, however, a very strumous subject, having suffered much from suppurating glands in the neck, and he was lately brought back to me with recently formed sinuses, which led down to carious bone on the posterior

surface of the tibia. I scraped with Volkmann's spoon, and he is now well. It is, in my experience, a solitary case.

There is a distinct difference in this respect, also, between excision of the knee and excision of the elbow. I put aside cases in which the operation has been performed under septic conditions, although I believe the same observation applies. But in excising with unbroken skin, the rule is, that union takes place by first intention. In such a case osseous ankylosis of the knee is fairly certain, and also free mobility in the elbow. I have only once seen this recrudescence of the disease in the former when ankylosis was osseous. I have three times had to lament it in the latter. Take one as an example: I excised the elbow in a lad of fourteen years, and having taken care to arrest hemorrhage, to remove all palpable disease, and to avoid antiseptic irritation, I secured union absolutely by first intention, no drainage tube having been introduced. For six weeks everything progressed admirably, but at the end of that time the parts became slightly swollen, the cicatrice assumed a broad, puffy, bluish appearance, and sinuses with pouting granulations slowly formed, and were only healed by prolonged rest and scraping. The ultimate result in this case, as in the other, was good, but only attained with care and anxiety, and I attribute the untoward condition solely to the necessity for maintaining the mobility of the joint by daily movement. Nor can it be said that this movement was excessive, for I avoid entirely the old rough and pump-handle treatment, and confine myself to extension with a light weight during the night and carriage in a sling with very gradually increased flexion during the day.

Now, in arthrectomy of the knee, in which it is difficult to secure osseous ankylosis, because soft parts may be allowed to remain and surfaces are unsuitable, this risk is always present. I have experienced it in two cases.

A young woman, one of the five first mentioned, had the synovial membrane very carefully removed by means of long incisions, one on each side of the joint, in May, 1886. Union took place by first intention, and for four months the patient wore a plaster case. For a time she was able to walk with considerable movement of the joint, but for a year the leg has been under almost constant treatment at home, and when she returned to the infirmary, two months ago, I felt constrained to excise. Another was yet more unfortunate. In a child, six years old, I employed arthrectomy in May, 1888. The joint healed absolutely by first intention, and after healing was enveloped in a starch and poroplastic case. The joint was not again seen till twelve weeks after the operation, when a sudden rise of temperature occurred, and, on examination, an abscess was found to have burst and become septic. Under this the child went down so rapidly that, during my absence in September, Dr. Hodsdon found himself obliged to amputate to save the patient's life.

My experience, then, of arthrectomy is this:

Age.	Number of cases.	Result.
21	1	Perfect cure with thoroughly sound limb and mobility up to a right angle
7	1	Perfect cure with slight but useful mobility.
14	4	Cure with either osseous or close fibrous ankylosis and fairly useful limb
18		
23		
25		
23	1	Recurrence of the disease and subsequent excision.
6	1	Recurrence of the disease and subsequent amputation.

My conclusion, therefore, in reference to the operation, based on my own experience of it, and not contradicted by the published results of other surgeons, is that it ought, meanwhile at least, to be very strictly limited. The cases in which it may legitimately be tried are, in the first place, those only in which a thorough and prolonged treatment by rest has been unsuccessfully employed. If the patients come under observation early, this want of success should be rare. A second limitation should be to those in whom the skin is as yet unbroken, because the operation being less thorough, the drainage more difficult, and complete ankylosis less sure, recurrence of the disease is more probable, and the risk of the procedure not less than with more radical treatment. Again, it should be employed chiefly in children; because in them only can the main advantage, continuance of growth in the limb, be of any avail, and in them only may the accidentally favorable mobility be legitimately in some cases expected. I would not assert that further extension should not be given to the operation in exceptionally favorable cases, when, for example, the personal and family history are free from tubercular taint, the patient is otherwise robust, and the disease slow and not purulent. But a thorough trial by rest, youth, and asepsis seem to me nearly essential conditions.

For other cases of strumous arthritis we have the choice between excision and amputation, and I must say that with extended experience I am inclined to increase the number of cases in which I recommend amputation. I suppose that in all cases amputation is comparatively safer, and the point to be determined is where the line should be drawn which indicates that the greater safety is counter-balanced by other advantages. It may plainly vary with variation, either in the element of risk or in the benefit derived by retention of the limb.

And first, it may safely be said that the danger attending either amputation or excision in a young and healthy person with unbroken

skin, is so small that the difference in risk between these operations may be treated as a *quantité négligeable*. In such, therefore, there can be no doubt of the propriety of preserving the limb, provided always that the disease can thus be fairly removed. I should not insist that it be absolutely and entirely removable, because, undoubtedly, the removal of the major part of the disease, and the relief of tension and the completeness of immobilization in many cases will allow the vitality of the texture to reassert itself and overcome the small portions of disease that remain. But I regard total removal as an important object for several reasons. These are, first, that a remanent focus of tubercular disease implies a long-continued threat of recurrence; second, that osseous ankylosis is more difficult to obtain when tubercular foci are present; and third, that dissemination of tubercle through the system is a result which does arise more frequently than is generally acknowledged when a large, raw surface, especially of bone, is exposed to tubercular infection. There can be no doubt that in the lower animals tubercular disease may be produced by inoculation. The conditions of such inoculation seldom, of course, arise in the human being, but the following case is one of considerable interest in this connection.

A woman, aged thirty-six years, was admitted to the Royal Infirmary in November, 1887, suffering from three nodules on the hand, each about the size of a walnut. Two were close together on the back of the hand over the fourth and fifth metacarpal bones, one about an inch away over the lateral aspect of the wrist. The lowest had already opened, and all presented the clinical aspect of tubercular abscess. The history was that, in washing some handkerchiefs impregnated with sputum from a sister who was dying of phthisis, she deeply pricked her hand with a safety-pin attaching them together. The little wound inflamed slightly, and a few drops of pus came out, but it healed again in a week or ten days. Seven or eight weeks subsequently, a nodule began slowly to form at the spot; a week or two later a second, higher up; and the third on the side of the wrist, considerably later still. I scraped them out and passed drainage tubes from one to the other, finding them connected by diseased texture, and after a second scraping, six weeks afterward, they healed soundly. The tubercle bacillus was found in the scraped-out material.

It is easy to understand, and it is consistent with experience in operations for tuberculous disease, that the raw surface may become inoculated by diseased matter left behind, and the progress of the disease be more rapid than before.

If this danger of recurrence exist, it is plain that in such cases osseous ankylosis must be difficult to procure, and, indeed, there can be no other reason for the long delay in attaining it, and the occasional total failure which occurs in excision of the knee. A fracture through cancellated texture rarely fails to unite. The difficulty rather is to prevent an ankylosis of the neighboring joint. Now, an excision is specially prepared for

union; the surfaces are made as broad as possible, and usually special apparatus, as sutures of wire, are used to secure accurate apposition. But there can be no doubt that delayed union is common. In most of my excisions I find that mobility can be detected easily at the end of eight, ten, and twelve weeks in almost every case, and I do not find that union is more rapid in aseptic cases, which heal by first intention, than in those which have been done through septic sinuses, and which I have failed to render sweet. I think it not impossible, indeed, that the aseptic condition may diminish the rapidity and certainty of osseous union. I have been inclined to think that, so far as osseous union is concerned, operations for ununited fracture were more successful in old septic days than now. Much more dangerous they doubtless formerly were; but, if they did not kill, they succeeded, presumably from the hyperæmic results of inflammation. But this is not an adequate explanation of delay in excision. It is, if aseptic, precisely in the same condition as a simple fracture or a compound fracture kept aseptic. As in operations for ununited fracture, so, in excision for strumous disease, there must be some factor special to the condition which involves delay, and in the latter this lies, doubtless, in the state of the texture brought about by the disease, and which must be aggravated if foci of tubercle be left behind.

But again, after operations through strumous tissue there is a danger of dissemination of tubercle. This occurs in two ways. Much against my will I operated by excision in a case of tubercular disease of the knee-joint in a young man in whom the disease was so extensive that I strongly advised amputation. He would not submit, and died of miliary tubercle, chiefly in the lungs, a few weeks afterward. These cases have, I think, sometimes been regarded as septic poisonings, to which, in many respects, the symptoms bear a close analogy. They certainly occur more often than is generally supposed, and especially after operations in which large surfaces of bones are exposed, and in which perfect drainage from these surfaces is in the nature of things impossible.

The other mode of infection has, also, I think, failed to attract adequate attention. I scraped out the interior of the os calcis, as I thought very thoroughly, in a strumous abscess of the interior of that bone, and in doing so succeeded in rendering it aseptic. Four weeks thereafter, and before the wound had nearly healed, strumous arthritis of the wrist declared itself, and ultimately required excision. A boy of thirteen years was brought in with very extensive tuberculous osteitis of the left ulna, which had been going on for many months. He had no other lesion at the time. I removed a large exfoliation and scraped out the interior of the bone throughout nearly its entire length. Shortly after the operation, which was thoroughly successful locally, there appeared, one after the other, osteitis of the crest of the right ilium leading to carie-necrosis, necrosis of the right frontal bone, and antero-posterior curvature of the spine in the region of the second dorsal vertebra. I could multiply

such cases considerably, and even mention instances in which apparently successive showers of diseased material have been deposited from the circulation. These will serve, however, to illustrate the proposition that dissemination occurs after operation, especially in osseous tubercle, not only in the way of miliary tuberculosis, but also in a more limited manner, when the tubercle introduced into the circulation is probably less abundant, and chooses, as it originally did, a suitable soil for its development.

These considerations, then, must form an important element in the determination of the nature of the operation to be attempted, as regards total removal of disease. They are most serious in connection with arthrectomy, less so in excision, least in amputation. Such accidents, again, will plainly be most liable to occur when the disease is extensive, and one or other mode of operating will be, therefore, performed according to the extent of the disease. But they will, also, be prone to happen in proportion to the size of the wound, and especially of raw osseous surface, and in this respect the relative value of the operations varies in different cases, arthrectomy in some having the advantage. It is evident, therefore, that no hard and fast rule is to be laid down, and that in every case many factors must be carefully weighed, one against another, before the surgeon can decide upon the appropriate operation.

I have already said that in a young and comparatively healthy person with unbroken skin, the risks of amputation and excision are so small, and differ so little that preservation of the limb should be the rule. This proposition implies that age, health, and septicity, and to them I would add the social status, are factors of no mean importance in determining our choice. We incline to amputation in preference to excision more and more; the older a patient is the more his constitutional vigor has been impaired, or is naturally defective, the greater the damage sustained from putrefactive conditions, and the less the pecuniary and hygienic circumstances are capable of affording the means of a long struggle with disease.

These propositions are so palpable, and have so often been illustrated, that it is unnecessary to cite cases in their support.

But I feel convinced that, with increasing experience, the surgeon tends more and more to conserve the life rather than the limb, the limb rather than the joint. As each advance in surgical therapeutics diminishes the danger of conservatism, he draws his line back in accordance with the logical consequence of the improvement. Where the comparative risks differ but little he preserves, but the tendency with many is to extend a new improvement further than is legitimate, and it is well, in such circumstances, to draw attention to the conditions of the problem, and in this particular case to define, so far as may be, the reasonable limitations of arthrectomy as compared with excision and amputation.

REVIEWS.

LECTURES ON ECTOPIC PREGNANCY AND PELVIC HÆMATOCELE. By LAWSON TAIT, F.R.C.S. Edin. and Eng., LL.D., Professor of Gynecology in Queen's College, Birmingham; Surgeon to the Birmingham and Midland Hospital for Women, etc. 8vo. pp. 107. Birmingham, 1888.

CIRCUMSTANCES conspire to direct attention to this work out of all proportion to its size. The subject is one of the deepest interest from its intrinsic importance, from its recent rapid advance, from the open questions relating to it which yet remain unsettled, from the widely diverse views upon them held by men of equal ability and equal opportunities.

The author is well known as a bold and skilful operator, whose field of observation has been exceptionally wide, and who has advanced the lines of our knowledge. He is a man of decided opinions, as are most men who form them from observation, and he is in the habit of stating his views with a positiveness which permits of no doubt as to his meaning. It cannot be denied that he has also exhibited other characteristics which cause the productions of his pen to be scrutinized with interest. Certain altercations on this side the water need not be mentioned; in some of them Mr. Tait had great provocation. With positiveness of conviction and of statement he has manifested also the utmost scepticism as to the testimony of others and an intolerance of criticism unexpected in one who has done so much good work. Views which do not agree with his he greets with undisguised contempt, and if any one dissents from or opposes his doctrines he turns and rends him, and thus has developed bitter contentions on every hand. The subject-matter of this little work then invites a close examination while the characteristics of the author provoke it.

The title of the work, so far as "lectures" are concerned, is a misnomer. No address heads the opening, no statement is made as to when, where, or to whom was the delivery. There is no division in the text; the book begins without preface or introduction and continues unbroken to the end. The style is sometimes faulty; often short, sharp, and incisive; and Buffon said "the style is the man." Did space permit we should like to give some specimens, but will refer only to his treatment of the influence of the puerperal condition upon the result of operations [p. 24] and give the following for its practical as well as its illustrative value:

"Absolute accuracy of diagnosis in the abdomen [!] is very far from being possible; only the ignorant assert that it is, and only fools wait for it."

The book is eminently practical in character, as might be expected. It deals with the author's own observations and is based upon "post-mor-

tem examinations, museum specimens, and the facts observed at operations." The field has not been limited :

"I have now been concerned directly and indirectly in the post-mortem examination of twenty-six women who died from hemorrhage into the peritoneum from ruptured ectopic gestation. I have had to operate forty times for the same cause, and I have witnessed about ten similar operations by other surgeons, making in all the unique experience of seventy-six cases."

Looking through the contents we find a good deal here that is in the author's treatise on *Diseases of the Ovaries*, published in 1882. Indeed, many pages have been transferred literally. The largest amount of new matter relates to hæmatocele, its pathology and diagnosis, and an account of the cases of laparotomy for ruptured tubal pregnancy, an operation not yet performed when the treatise was published. Of these cases Mr. Tait has had no less than forty, and a list of them is here given with date and place of operation and name of medical attendant, so that all cavil is precluded. Of these forty operations for an overwhelming calamity and a most dangerous condition, all have been successful but two. This is a record of which the author may well be proud, and it is still more to his honor that he first executed this procedure which had been frequently suggested and even urged upon the profession but which no one before had been bold enough to undertake. This work of the author will be an enduring monument to his memory: it cannot be destroyed however bitter may be the controversies in which he engages. He may await quietly the verdict of time.

But we have to deal now with the book and its contents and to consider the manner of presentation of the subjects. We should like to give the author's views upon the pathology and classification of hæmatoceles, but must limit attention to extra-uterine pregnancy, and will follow the writer pretty closely through three subdivisions of the subject: the pathology; diagnosis, in the early stages only; and treatment.

The views of Mr. Tait as to the pathology of extrauterine pregnancy, or ectopic gestation, as he prefers to call it, have been before the profession for a number of years, having been presented in journals and in the treatise on ovarian diseases. The briefest statement of them is alone required here. His leading doctrine is that the error of location of the impregnated ovum is exclusively limited to the tube. Going on to the point of rupture the cases diverge into two classes according as the rupture occurs on the lower portion of the tube, and the effusion of blood and extrusion of the fœtus are between the layers of the broad ligament, thus extra-peritoneal; or as the rupture occurs in other portions of the tube and the discharge of contents is into the abdomen—intra-peritoneal. The latter is uniformly fatal, without operation for clearing out the abdomen, either by hemorrhage or by suppuration. The course of the former, the *sous-peritoneo-pelvienn*e of Dezeimeris, may be very diverse. It may, *a*, develop to full time; *b*, may die and be absorbed; *c*, further along may die, suppurate, and be discharged *via* rectum, bladder, vagina, or umbilicus; *d*, may become a lithopædion; *e*, may become abdominal or intra-peritoneal by a secondary rupture of the tube. This scheme has the merit of clearness, of probability, and of simplicity. If true, it brings order out of confusion, and reduces to a very few the

numerous varieties of former writers, amounting sometimes to nearly a dozen.

Hoping, then, that other observers will corroborate and verify Mr. Tait's views of the pathology thus far given, there would be nothing to say had he stopped here. But in his denial of the existence of primary abdominal and of ovarian extra-uterine pregnancy, we have an exhibition of his methods and an illustration of his mental characteristics that cannot be passed by. It will have been seen in the scheme given, that an abdominal or intra-uterine gestation is admitted, but it is only as secondary to a rupture of the tube, the placenta having its attachment to that structure still. But a primary pregnancy in this locality, the ovum dropping into the peritoneal cavity and the placenta attaching itself to the viscera, he denies. As this variety has been recognized by all who have ever written on the subject, he should give his reasons for rejecting it, and this he does:

"That a fertilized ovum may drop into the cavity of the peritoneum and become developed there, is a contingency I cannot accept for a moment, for the powers of digestion of the peritoneum are so extraordinary that an ovum, even if fertilized, could have no chance of development."

But facts are stronger than beliefs or doctrines. There have been some cases in which the placenta was found attached to omentum and intestines. Thomas found a placenta attached to the colon from caput to the sigmoid flexure.¹ Maticki's case² is alluded to by the author, and Lecluyse's.³ In the latter, the ovum escaped through an aperture left by the healing of the wound of a Cæsarean section. These cases he explains by a fine specimen of special pleading, but does not say anything of Kellar's case,⁴ which occurred two years after amputation of the body and part of the neck of the uterus, and in which it would be difficult to believe in a tubal location. Still, it would not cause any difficulty to Mr. Tait; he reiterates that all these pregnancies are tubal, and tubal they must be:

"I do not see any difficulty in believing even that a pregnancy originally tubal may be completely extruded from the tube, that the tube may contract and heal, and that a secondary and wholly intra-peritoneal gestation may thus be formed."

This may be accepted as Mr. Tait's belief, but if Maticki's case sustains it, a full report of it should have been given, and if Dezeimeris has furnished any proof—his name is given in brackets in this connection—it should also have been given in full. Granting, however, all that is here claimed, what becomes, in the light of these cases, of the digestive powers of the peritoneum?

The ovarian variety of extra-uterine pregnancy is, undoubtedly, very rare. Stoltz and Depaul both denied it, and Mr. Tait is following in good company. He does not, however, absolutely deny this variety, being evidently staggered by the weight of Spiegelberg's authority. He says justly that "only at the hands of a competent observer could the assertion of an ovarian pregnancy be accepted," and the eminent German must surely be taken as such. But we have nothing to do with Mr. Tait's denial of, or scepticism in regard to, ovarian preg-

¹ Amer. System Gynecology, vol. ii.

² Monatschrift für Geburtshilfe, May, 1869.

³ Bull. de l'Académie de Belgique, 1869.

⁴ Spiegelberg, Lehrbuch der Geburtshilfe, p. 309, note.

nancy. The methods he takes to dispose of facts which stand in the way of his doctrine alone concern us. Puech's case is an admirable example.¹ The report says that on incising the cyst there was found "an embryo in the form of a vermiform body, 1 mm. long, curved in the middle and swollen at one extremity." Upon this we find the following, and much more like it:

"Of course, the whole conclusion in this case depends upon the assumption that this vermiform body was an embryo. It may have been one, but certainly there is no proof advanced in favor of this view. . . . I am not inclined to admit that this vermiform body has been shown conclusively to have been an embryo."

This is a short and easy way to dispose of the facts of a post-mortem examination, especially by one who was not present and did not see the specimens! What kind of proof does Mr. Tait want to establish anything which runs counter to his doctrines? An answer will be found in his comments on the case which Spiegelberg has reported [p. 10], and it will justify italics:

"As Spiegelberg *does not claim to have found ovarian elements all over the wall of the sac*, I think we may be quite justified in being somewhat sceptical even about this case."

Other instances, quite as flagrant, could be taken from the few pages [8-13] devoted to this subject. But we find no notice of the statement made by Spiegelberg,² that in ten cases the existence of ovarian pregnancy has been "positively proved;" nor that of Leopold, that fourteen cases have been "clearly established by anatomical proof."³

No portion of the subject of extra-uterine pregnancy is of more importance than diagnosis in the early stages. As giving opportunity for treatment before rupture of the sac it is of prime importance. To those who have read the author's papers upon this subject and his remarks in societies, it will not be surprising to find that he here expresses the greatest doubt as to the possibility of a diagnosis of this aberrant gestation before the period of rupture. This he does in several places [pp. 15, 16]:

"Much discussion has taken place of late years as to the possibility of diagnosing tubal pregnancy before the period of rupture, and many strangely dogmatic assertions have been made to the effect that such cases have been diagnosed and successfully treated. I am bound to say that I am exceedingly sceptical concerning the correctness of these statements."

This is not quite so categorical as his utterance at the British Medical Association meeting at Brighton, where he said, "There are no symptoms in tubal pregnancy before rupture is established."⁴

But there has been long recognized an assemblage of symptoms which point strongly to this pathological condition. We can go back to Bernutz and Goupil, authorities which Mr. Tait quotes frequently, and whose facts even, as well as doctrines, he accepts. They speak of an "ensemble of signs, no one of which is pathognomonic, but the reunion of which scarcely leaves a doubt."⁵ Of course, an author who assumes

¹ No reference or date given.

² Maygrier, *Terminations et Traitement de la Grossesse Extra-uterine*.

³ Op. cit., p. 303. Thèse. Bruxelles.

⁴ Brit. Med. Journ., 1886, vol. ii p. 1034.

⁵ Clinique sur les Maladies des Femmes, t. i. p. 567.

to teach his medical brethren will examine these signs and symptoms one by one. We certainly expect Mr. Tait to do so, because in an article on "Methods of Diagnosis,"¹ he says that "every method that is possible for a correct estimate of the nature of the disease should be exhausted before the abdomen is opened." We will see. The first point is a belief on the part of the patient that she is pregnant, or such general symptoms of this condition as lead the practitioner to believe that she is. This has been the case so frequently, that some writers have held its presence to be essential. Bernutz and Goupil say it was so with all their cases but four. Mr. Tait's experience, as recorded in these lectures, is singularly at variance with that of others. He says [p. 17] that "the great bulk of my patients had no suspicion that they were pregnant at all;" and that the whole history of such cases may be "misleading." This testimony will confirm that estimate of this feature to which it is alone justly entitled: if present, its evidence is strong, but its absence is of no great value. It is singular, however, to find on comparing the author with Mr. Tait, that in the report of the first five cases operated on by him for rupture of the tube,² that due consideration is there given to the history of the case; and "the diagnosis is not so very difficult after all, for in many cases the existence of pregnancy has been suspected before the rupture occurs."

The next feature of extra-uterine pregnancy is disordered menstruation; this flow is either absent, or irregular, or continuous. Mr. Tait says:

"Menstruation is sometimes suspended absolutely, as in normal pregnancy, but more usually it occurs irregularly and profusely, so that here again we are misled."

And this is all he says upon this point! Menstruation is not mentioned again. It would have been most satisfactory to know how we are "misled," by this symptom, which ought at once to waken suspicion and direct attention, but the author does not tell us.

It will scarcely be believed that these points in the early diagnosis are all that are considered in these lectures. We would not dare to make such an assertion if we had not the book to produce. But here there is no mention of attacks of severe abdominal pain, no statement that the decidua is sometimes thrown off, and that this occurrence is by very respectable authority held to be pathognomonic. There are no directions, when these symptoms present themselves, to proceed to a vaginal examination. Nothing is said of what is likely to be found upon making such examination, not a word as to a tumor present displacing the uterus; no description of certain signs which have always been found in such cases, no statement of their relative value or estimate of their worth in making a differential diagnosis. In this, his latest production, Mr. Tait is behind himself. He is behind his treatise on *Diseases of the Ovaries*, in which he says [p. 83] that in extra-uterine pregnancy there is a tumor intimately associated with the uterus, which is always enlarged, and that a cervix quite open is "the most important point." And this statement he reiterated in a debate before the London Obstetrical Society.³

¹ Amer. Journ. Obstet., April, 1866.

³ Amer. Journ. Med. Sci., July, 1873, p. 278.

² Brit. Med. Journ., June 28, 1884, p. 1250.

If Mr. Tait does not consider the symptoms of diagnosis *seriatim*, as it is seen he does not, surely he states them in gross. We find the following:

"The diagnosis of tubal pregnancy before rupture of the tube is not easy, as I have said, because the patients do not claim our attention. What symptoms there are, as in the solitary case where I had a chance of making a diagnosis, are *merely those of tubal occlusion and distention*—matters very easy to diagnose and to treat"—p. 24.

Italics are supplied to part of this quotation, because it is marvellous that Mr. Tait should ignore the fact that there are peculiar features of this tumor which, he has said formerly, is attached to the uterus, features which belong to no other cyst or inflammatory effusion ever found there. It is not possible that he does not know that in very many of these cases there is a vascular pulsation felt in the walls of this enlargement. This was pointed out as a feature of extra-uterine pregnancy by Baude-locque. We cannot believe that he does not know that many observers have reported that this tumor increases rapidly in size. Is there any occlusion and distention of the tube that grows so rapidly that its increase can be noted from week to week? Upon this point of marked difference between a gestation cyst and other tumors of the pelvis the evidence is overwhelmingly against the author, simply from the number of witnesses. Had one individual, even with as great experience as Mr. Tait, described these peculiarities of the cyst, his evidence might be impeached. But the facts rest upon the observation of many different individuals; of men who had no thought in mind of extra-uterine gestation, but who were struck with the fact that what they had under touch was different from anything they had ever met with before, and who were forced into an unexpected old theme—a novel diagnosis.

In the matter of diagnosis of this condition after the death of the child these lectures are full, explicit, and satisfactory [pp. 59-70]. What explanation can there be, then, for so meagre a consideration of diagnosis in the early stages? Mr. Tait has never been called upon to make an examination before rupture but once. This, he says, is "the most singular thing of all," and it certainly is. But is there any warrant in this fact for doubting that no one else has made or can make a diagnosis of extra-uterine pregnancy because he has not had the opportunity of doing so? In this country the diagnosis has been made repeatedly and by so many different men that it would be invidious to mention individuals. A single paper contains a record of four;¹ and many cases could be adduced in which an operation or a post-mortem examination verified the diagnosis. Winckel, in Germany, has made a diagnosis in thirteen cases, in six of which it was verified afterward.² From the treatment which we have seen that Mr. Tait accords to facts observed by others, we could not expect him to receive these reports. If he will not accept those presented before him, he would not listen to these. At the Brighton meeting of the British Medical Association, Dr. Berry Hart, an authority that Mr. Tait quotes approvingly, reported a case in which diagnosis was made before any symptoms of rupture occurred. Mr. Tait was present at that meeting and then made the statement, already quoted, that "there were no symptoms in extra-uterine pregnancy until rupture was established."³

¹ Dr. Janvrin's paper, N. Y. Med. Journ., April 28, 1888.

² Lehrbuch des Geburtshülfe, 1880.

³ Brit. Med. Journ., Dec. 4, 1886.

From a careful study of all the recorded cases of extra-uterine pregnancy the conclusion cannot be escaped, that while exceptional cases present insuperable difficulties of diagnosis, as a general rule, a concurrence of symptoms announces emphatically the probability of this condition, and by a physical examination its existence is established, and that with greater ease and certainty than in normal pregnancy at the same period. This has been maintained by high authority in this country, and in Great Britain and in Europe. Is it expecting too much of one who appears before us as a teacher, that he should have given every point for investigation, or that he should help his brethren in the matter of diagnosis rather than discourage them?

In considering the treatment of this most dreadful and heretofore most fatal calamity that can overtake woman, no one can fail to rejoice at the progress which has been made. An accident so long considered as hopeless by the best minds of the profession is at last yielding to the therapeutic agents and the bold surgery of our times. Treatment of extra-uterine pregnancy after rupture of the sac is plain. Suggested by several, urged by some, it remained for Mr. Tait to put it into execution, and his record of thirty-seven cases saved out of thirty-nine is one of the most brilliant triumphs of modern surgery. We have only here to comment upon one point, which is historical. Mr. Tait does not attempt a full history of the procedure, but he gives enough to justify the demand that he should give more, and with due regard to the honor of this country we can let no account pass unchallenged that does not contain some mention of the work of Stephen Rogers. From Blundell, in 1830, Harbert, in 1849,¹ and to Kiwisch, in 1857, and Tanner and Tyler Smith, and Bernutz and Goupil, laparotomy for this condition was hinted at or faintly suggested. But no one formulated the doctrine, emphasized its importance, and boldly urged it upon the attention of the profession until Stephen Rogers did so before the American Medical Association.² He first clearly taught the doctrine which Mr. Tait has carried into execution, and it is with regret that we do not find here any mention of his contribution to the subject. Still more do we regret to find one of our countrymen making the same omission. Three pages upon this portion of the subject are quoted from an American writer. The "mention" of Blundell, and the "suggestion" of Bernutz are given by this writer, with the "realization" of Mr. Tait, but not a word, not even the name of Stephen Rogers, the man who, as early as 1867, wrote these words:

"The first thing in order is the prevention of any further loss of blood; to accomplish which there is no choice of methods: *the peritoneal cavity must be opened; the bleeding vessels must be ligated.* . . . As gastrotomy is the only hope, gastrotomy must be performed."³

As space could not be found in this little work for these few lines, while three pages of laudation of the author by this writer are admitted, it looks very much as if fealty to Mr. Tait, rather than scientific value, was the criterion of quotation from American writers.

On the treatment of the sac before rupture, of course there is nothing to be found here, as the author has never made a diagnosis. Should he meet with a case he would "advise its immediate removal by abdominal section." He does not mention Veit's two cases,⁴ in one of which a

¹ Parry, op. cit., p. 212.

² Transactions, 1867.

³ Op. cit., pp. 117, 118.

⁴ Maygrüer's Thesis. Zeitschrift für Geb. u. Gyn., 1885, B. xi.

diagnosis was made before operation, nor Price's case in this country, also with a diagnosis.¹ Nor does he anywhere enter upon the technique of the operation; an omission which is to be regretted. These lines alone contain all that is said of the method of operating:

"The true method of operating is to separate adhesions rapidly regardless of bleeding, and make at once for the source of the hemorrhage, the broad ligament, tie it at its base, and then remove the ovum, débris, and clots at leisure."

But there is another mode of dealing with an extra-uterine pregnancy before rupture which has proved efficient in, for so new a measure, quite a good number of cases, and a method whereby the patient escapes the dangers of a severe operation. We allude, of course, to electricity, and it remains to be seen what the author of these lectures has to say of this. He would perform laparotomy in a case when diagnosis had been made before rupture,

"as being more certain and far more safe than the fancy methods of puncturing the cyst and injecting poisonous fluids, or passing through it some kind of galvanic current" [pp. 24, 25].

In another place [p. 53], he speaks of the treatment by electrolysis as "mere nonsense." Again [pp. 70, 71], he considers the "various forms of treatment designed to obviate the necessity for surgical operations;" and says of "puncturing the ovum sac with needles medicated or galvanic," as an "immoral and dangerous proceeding." On page 50 he speaks of "curing the cases by a puncture either simple, medicated, or electrolytic." Further,

"The surgical principles on which the operation is to be conducted are now so well established, and *its results are so good*, that the opponents of the operation seem to me to be in a very illogical position if they still continue to advocate certain other surgical proceedings *of which the results are notoriously bad*" [p. 70].

Mr. Tait appears before us as a teacher; as a teacher of a scientific subject. In an open debate upon any subject it is held essential to honor that the position of opponents shall be fairly stated, and whatever facts they present be treated with justice. In science all facts must be stated, examined, and duly considered; and science tolerates no contemptuous epithets. Now, as to fairness, Mr. Tait has here mixed together the methods of puncturing the cyst with needles for electrolysis, of injecting certain fluids to kill the foetus, and has failed to differentiate or speak of the treatment by the faradic or galvanic current without puncture. Moreover, he details [p. 75] a case of Matthews Duncan's in which galvanism was first used, then two grains of morphia were injected into the sac, then the amniotic liquor was drawn off, then a quarter of a grain of morphia was injected into the body of the foetus and repeated, then galvano-puncture was resorted to, and again morphia injected into the body. And this case Mr. Tait presents as a specimen of the "application of electricity for the treatment of ectopic gestation."

Now, to return to the quotation last made, in which we have italicized some portions. What is the operation which Mr. Tait contrasts with the application of electricity? Not laparotomy for ruptured sac; elec-

tricity has never been advocated for such cases. Its advocates apply it only in the early stages to the unruptured sac to kill the foetus, stop growth, and save the patient the perils of laparotomy. An operation in competition with this would be extirpation of the sac before rupture. Mr. Tait has not performed this operation; it has been performed but a few times in all. How, then, can it be said that "the results are so good"? Is it possible that Mr. Tait, a teacher, can contrast an operation for a certain stage of the disease with measures of relief adapted only to another stage?

What are the results that are "so notoriously bad?" The author is speaking of all measures designed to save the patient from laparotomy. We will not champion the cause of injecting the sac with morphia, but the results obtained by Winckel, as reported at the last meeting of the German Gynecological Society,¹ will serve to show that a final decision has not yet been reached even as to this measure. Still speaking of these procedures, Mr. Tait says—

"There can be, there clearly is, *from the statements of those who have tried these plans, neither certainty nor safety about them*" [p. 25].

The treatment of extra-uterine pregnancy by the faradic or galvanic current is one of these plans, and the above is so extraordinary that we italicize it. Where are the statements? Certainly they should have been given, and doubtless would have been had there been any to give. As to the certainty and safety of this mode of treatment, surely Mr. Tait, as a teacher, keeping up with a subject to which he has contributed so much, should know something of the cases in this country reported as cured by electricity. They surely deserve respectful mention. One well-marked case is reported by a gentleman who has published an experience nearly one-half as large as that of the author himself, large as it is. One volume of the transactions of a society, of which Mr. Tait is an honorary member, as long ago as 1882 contains no less than seven of these cases.² In 1886, it was published that one man had had no less than eleven successful cases.³ These cases certainly demand some sort of notice from a gentleman who delivers a course of lectures upon the subject.⁴ It would be useless to refer Mr. Tait to these cases, or to such clear and decisive ones as those of Thomas,⁵ Garrigues,⁶ and Lusk.⁷ Useless because we can see how he treats them nearer home. At the meeting of the British Medical Association, at Brighton, Dr. Aveling read his case, already alluded to under diagnosis, and it was a clear and well-marked cure by electricity. Dr. Gardner, of Montreal, also presented one in which after the sixth application of the current "the sac suddenly shrank and pulsation ceased." Whereupon Mr. Tait arose and characterized the use of electricity for the cure of extra-uterine pregnancy as "one of the most nonsensical proposals which had ever been submitted to a surgical audience." By certain expressions here and there through the book, Mr. Tait shows that he chafes under strictures upon his proneness to resort to laparotomy. Does he not deserve more than he has yet received, if in advocacy of operative procedure he

¹ Verhandlungen, p. 82, 1888.

² Amer. Gyn. Soc. Papers by Garrigues and Thomas

³ Same, p. 474, 1886.

⁴ The latest reports give 39 successful cases treated by faradism or galvanism without puncture. Hawley, N. Y. Med. Journ., June 18, 1888, and Brothers, Amer. Journ. Obst., May, 1888.

⁵ Case IV, Trans. Amer. Gyn. Soc., vol. ix. p. 176.

⁶ Ibid., vol. vii. p. 185.

⁷ Amer. Journ. Obst., p. 329, 1881.

ignores results obtained over and over again by less dangerous methods? When he not only ignores facts reported by competent observers, but turns them aside with the sneer of "nonsense?" It is folly for him to attempt to deny the reports. The men making them stand too high and they are too numerous. As with diagnosis, one individual upon this point may be mistaken or biassed, however large his experience. But here are a score of observers who have found a cyst in the pelvis, rapidly growing, actively pulsating, and, after a few applications of the current, observed it shrink, cease to pulsate, and begin to disappear, while the patient suddenly lost all symptoms which were before well marked.

Mr. Tait, having characterized the treatment by electricity as "non-sense," makes two formal objections to it. The first is that it is "immoral." It is immoral to kill the fœtus, albeit yet only twelve or sixteen weeks advanced, and out of the receptacle which it usually occupies, in order to rescue the mother from the gravest peril, and to do this puts "legitimate practitioners of medicine quite on a level with abortion-mongers and reckless craniotomists!" In support of his position he adduces two cases. The first is Dr. Aveling's; the second, one by Dr. Buckmaster.¹ Both of these patients, besides presenting the other symptoms of extra-uterine pregnancy, had suffered attacks of severe hypogastric pain with symptoms of collapse. Yet Mr. Tait maintains that there was nothing calling for interference. "Beyond the fact that an ectopic gestation was diagnosed, there was no reason apparent for interfering." Of the other, he says: "The patient was suffering from nothing but slight discomfort, and the unfortunate fact that Dr. Buckmaster had diagnosed an ectopic gestation." Now the author plainly teaches the doctrine, and it needs impressing upon the profession at large, that these attacks of severe pain are hemorrhages, or partial ruptures of the cyst, and that several such attacks may occur before the final fatal one. That there may be no mistake about this we quote. On page 19, after giving a graphic description of an overwhelming case, we read:

"Sometimes the symptoms abate, the patient recovers for a few days and even gets about, then a recurrence of the peritoneal hemorrhage occasions a revival of the serious symptoms, and this may be repeated at intervals several times before the fatal issue is arrived at."

Again: "In very many of these cases a feature of great interest is the fact that the first attack of hemorrhage is generally not fatal, and that the records yield incontestable evidence that it may require the repeated occurrence of bleeding to bring about the fatal issue" [p. 38].

So Mr. Tait boldly assumes that the final rupture had taken place in these cases; that fœtuses of about twelve and sixteen weeks were so sure to become viable that it was "immoral" to destroy them, and relegates Drs. Aveling and Buckmaster to the company of "abortion-mongers" for having acted upon the note of warning that he himself sounds.

The second objection made by the author to electricity is that, the fœtus being killed, the placenta will continue to grow and cause trouble. This is supported by a series of pathological examples in which the size of the placenta did not correspond with that of the fœtus. But, surely, to make this plea good, it should be founded upon clinical evidence. Some one of the thirty-nine cases thus treated should by this time have given evidence on the point. No such example can be adduced. But

¹ Medical News, July 21, 1888.

Mr. Tait presents one case to sustain his point, and it must not be omitted because it so well illustrates his peculiar methods of dealing with evidence. He gives a case, p. 74, from Hart and Barbour, in which, "*after a puncture of the cyst with an aspirator needle, the patient died with symptoms of internal hemorrhage;*" and then says, "the continued growth of the placenta after the foetus had died had led to fatal hemorrhage." Mr. Tait has evidently forgotten the physiological law that an organ whose function has ceased atrophies, and, moreover, in his treatment of extra-uterine gestation arrived at term, he manifests no fear of this continued growth of the placenta, but closes the wound over it, awaiting a more favorable time in the future for its removal.

Finally, is there any connection between the hostility to electricity manifested by the author and his doubts as to the possibility of an early diagnosis? The query is forced upon us because the course he pursues upon these two subjects is exactly similar to that followed in this country by those who advocate laparotomy as the only treatment of extra-uterine gestation. Doubts have been so openly and frequently expressed as to the correctness of diagnosis that those who have reported but a single case feel that they would never do the like again. Yet these doubters would surely accept a diagnosis of pleuritic effusion, when made by *cliniciens*, and not meet it with the suggestion that the symptoms having disappeared, the liquid itself not being presented, there was no effusion after all!

These lectures were evidently not intended for pupils, for the most elementary instruction upon the subject, as diagnosis, is omitted; they cannot be intended for the profession, for they do not contain a full account of the subject. As a contribution from Mr. Tait, setting forth his operative work, the book contains some valuable material, and some new and probably true views of pathology. As a scientific treatise we are compelled to say that it is not worthy of the name. The false logic it contains, the numerous instances of special pleading and of begging the question, the bald assumptions, the coolness with which the reader is informed that the reporter of a case did not see what he says he saw, render it a book *sui generis*. The whole range of medical literature may be searched in vain for its equal.

J. C. R.

A CLINICAL ATLAS OF SKIN AND VENEREAL DISEASE, INCLUDING DIAGNOSIS, PROGNOSIS, AND TREATMENT. By ROBERT W. TAYLOR, A.M., M.D., Surgeon to Charity Hospital, New York, etc. Illustrated with one hundred and ninety-two figures, many of them life-size, and fifty-eight beautifully colored plates; also many large and carefully executed engravings through the text. PART III., VENEREAL DISEASES, and PART IV., DISEASES OF THE SKIN. Philadelphia: Lea Brothers & Co., 1888.

THE third and fourth parts of Dr. Taylor's admirable atlas are, in all respects, equal to those which have been already given to the professional public. The colored plates, new and old, are admirable representations of the pictures presented upon the surface of the skin in the several diseases chosen for illustration. Some of the old (*c. g.*, Plate XXIII. Fig.

2, representing a papular syphiloderm in groups about a child's mouth) are better in the reproduction than in the original; while others (*e.g.*, Plate XXVII. Fig. 1, portraying a moist eczema of a child's face and scalp) appear to better advantage when somewhat reduced in size, than when printed in their former dimensions, corresponding to the larger figures of the Sydenham Society's sheets; a few were inferior in execution when first published, and have naturally gained nothing in the reproduction, a defect, however, due to the artists who first undertook the onerous task of reproducing the multiform shades of a cutaneous exanthem in their original colors. The portrait of erythematous eczema of the face (Plate XXII. Fig. 1) is decidedly less faithful than another representing the same affection of the same region which first saw the light on this side of the Atlantic, but which was unfortunately not at the disposal of our author, in consequence of the destruction of the original plate.

Viewing this collection as a whole, it may be said of these, as of those which have been already published and received notice in these pages, that it is difficult to overestimate their clinical value to the practitioner and diagnostician. It is not always the larger and more highly colored pictures of any collection that are most prized by the connoisseur. A careful study of even the smallest of these portraits of disease will well repay the student. Their practical value in teaching is exactly proportioned to their faithfulness to fact. Said the distinguished French artist, Jacques Louis David: "I wish that my works might be so completely antique in character that, if it were possible for an Athenian to return to life, they might appear to him to be the productions of a Greek painter." It may be said of many of even the smallest of these portraits, that if it were possible for the great clinicians of the last century to return to life, they would see nothing unfamiliar in these accurate representations of the phenomena of disease with which in their experience a hundred years gone they had become acquainted.

For example, in Plate XXIII. Fig. 4, one sees the portrait of a child's mouth, little more. The face is almost a monochromatic impression. The eyes are properly closed; there is almost no detail in the drawing of brow, cheek, and chin. There is a trifling and non-accentuated lesion visible near the ala of the right nostril, quite inconspicuous, because it lies almost in the shadow cast upon the cheek by the nose. The lips are not highly colored; they furnish merely the faintest suggestion of the color visible in a child asleep and not in sound health. Twelve, possibly more, shallow furrows, however, traverse their substance at somewhat irregular intervals, and almost symmetrically, running from the outer mucocutaneous border to the inner line of the lips, at right angles in general to the cleft of the mouth.

Here is a picture, and a small one too, upon which the eye of the careless will scarcely linger. And yet it is precisely the visual impressions of this kind which the practised eye never fails to fix. Often, indeed, has an expert found himself before a white-faced and anxious mother, wearing a dark dress, her baby's cheek pressed against its "waist," the infant's face partly turned toward her breast so as to throw a light shadow on its features, when these delicate little furrows have in a single glance set him on the straight road to an accurate diagnosis, concluding with that of the misinterpreted chancre of a father before marriage. It was the fly on the nose of one of his portraits that gained for Holbein his superb reputation in Basle.

The text accompanying an atlas of plates is often merely a running commentary, apt also to be loosely written, on the illustrations furnished, the plan adopted when the late Mr. Charles Dickens was first engaged to furnish the text of the *Pickwick Papers*—merely to set the scenery for the genius of an English caricaturist. The text, however, of Dr. Taylor's atlas often bears such a relation to his colored portraits of disease as Mr. Dickens's famous pages bore to the work of the unfortunate English artist, who only survived the first two numbers of the serial that made the literary reputation of the man that was to act as his subordinate. In the work before us there is a careful and accurate exposition of the subjects connected with each disease selected for illustration, the arrangement being made to conform, as far as possible, to the classification adopted by the American Dermatological Association. The space allotted to definition and explanation of the elementary and consecutive lesions of the skin, is as ample and satisfactory as that given in any treatise on dermatology. In the important matters of etiology and treatment, the author is as lucid and practical as might be anticipated from one of his experience and previous contributions to dermatological literature.

Among the questions suggested for consideration in the International Congress of Dermatology and Syphilography, to be held in Paris during the current year, the following are propounded respecting the group, "lichen:"

"I. Should we, in accordance with the older writers on dermatology, still apply the word, 'lichen' to a number of disorders which modern writers on cutaneous disease regard as different from each other?"

"II. (In the negative.) (A) What affections should be set apart from this group and distinguished by some other name? (B) Assuming that a new group of 'lichenous' affections should be thus defined, what species, forms, or varieties should be here recognized?"

All this is very Gallican, one must admit, and it is interesting to see what our latest author has to offer on this point. It is, in point of fact, as satisfactory as the utterances on the same subject, of most exponents of the much derided and yet positive "American school." Dr. Taylor knows no lichen save lichen planus, lichen ruber, and lichen scrofulosorum; and merely gives to lichen pilaris, or, as it is sometimes called, keratosis pilaris, the consideration which that sufficiently simple disorder, almost physiological for many persons, deserves in the way of reference. All this is in the line of simplification, all in the line of clearing up that amplified mist of words and nonsense which somehow has enwrapped so large a part of this interesting subject. Turning to a late writer on the other side of the Atlantic,¹ we find him practically repeating the doctrines of the English school as they were first enunciated by the late Sir Erasmus Wilson, one of the most learned scholars of English authorship, but one who unwittingly contributed more to the reproaches of our dermatological nomenclature than any of his contemporaries or successors.

Dr. Taylor does not hesitate to advise the internal administration of arsenic in properly selected cases of chronic squamous eczema, and doubtless bases his counsel in this instance upon a more favorable experience than has been reported by others. As one observes with more constant diligence the course of these obstinate forms of inflam-

¹ W. Allan Jamieson, *Diseases of the Skin*, Edinburgh, 1859.

thought the opportunity favorable for collecting together all the facts, and for examining the value of the various opinions on this subject.

Dr. Loye has rigidly excluded everything that pertains to sentimentality and the right which society exercises of depriving a human being of his life, and has confined himself exclusively to the scientific consideration of the question whether consciousness survives decapitation, or whether intellectual death is really instantaneous. In order to determine this question, he has witnessed the execution of criminals and noted carefully every manifestation which succeeds the separation of the head from the body, and having been instructed on this point, he has endeavored to find in the laboratory an explanation of the facts observed, in order to determine their physiological value. He has demonstrated that, if by means of anæsthesia an animal is deprived of consciousness before decapitation, the contractions of the face, the grimaces which seem to indicate profound suffering, produce themselves with the same regularity and physiognomy. From this it is inferred that these appearances are unconscious, automatic acts. The facts which the author has collated and commented upon are numerous and scientifically precise. The conclusion arrived at will relieve society of the charge of inflicting upon the criminal a torture as horrible as that for which he is punished.

The first part of the work is devoted to an historical survey of the subject. Part second relates to experimental researches, whilst part third treats of death by decapitation in man.

After stating the medico-legal applications of the study, the author sums up his conclusions of a physiological, medico-legal, and moral and social order, substantially as follows:

1st. After decapitation, there is an absolute immobility of the body and an equally absolute immobility of the head, except in some cases where certain movements follow the initial calm. Death is calm, notwithstanding the presence of asphyxia (hemorrhage with arrest of respiratory movements), which would be supposed to excite convulsive movements. But under the influence of active irritation of the nervous system by the blade, or violent shock, there is a suspension, an immediate abolition of reflex and automatic action of the nervous centres, The excitability of the centres has disappeared; the peripheric irritations yield no response; and the asphyxiated blood can no longer exercise its convulsive effects. There can be no agony, no movements, no convulsions; death is calm, and both the head and the body remain immobile. This calm death, without agony, is caused by inhibition, which masks the effects of hemorrhage and asphyxia.

The effects of inhibition may be permanent, or only transitory. In the first case, the centres are definitively shocked, and death overtakes them in the midst of their insensibility. In the second case, the properties of the centres are only momentarily suspended; they may reappear in the course of time. But, in order for them to regain their activity, the centres must have preserved the conditions of their nourishment, they must have received the blood which is necessary to their support. If, during inhibition of the nervous centres, the blood has completely disappeared, their return to activity is evidently impossible. This is the state of the medullary centres of the decapitated trunk. If, on the contrary, during the state of insensibility they have retained a certain quantity of blood, they may recover some activity until the moment when the blood becomes in quality improper and insufficient. This is probably

what takes place in the case of the encephalic centres, when, in the decapitated head, they manifest some signs of excitability after an inhibition of one or two minutes.

2d. These researches are of some value in medico-legal inquiries. They assist in determining the conditions of deaths of certain victims after section of the soft parts of the neck, and even after the spinal cord has been severed. In the former case, death has probably occurred from asphyxia; in the latter, by inhibition. They demonstrate, further, that great reserve should be maintained in selecting the sign which serves to mark the moment of death. The heart of the decapitated sometimes does not cease to beat until one hour after decollation. From a legal point of view, it seems strange to regard the corpse separated from the head as living all this time. The arrest of the heart should not then be considered as the termination of life.

3d. It has been shown that after decapitation intellectual death, the loss of consciousness, is immediate and final. It is of no consequence whether the heart continues to beat, the nerves remain excitable, the contraction of certain muscles produces movements more or less disordered; if the mental functions are abolished, if the return of consciousness is impossible, the other manifestations of life should neither interest nor disturb the criminalist or moralist. There can be no doubt that the punishment is painless.

Of the modes of punishment employed by different people, the proof is incontestable that the one by decapitation is that which presents in the highest degree the guarantees of the immediate destruction of mental life and the impossibility of return of conscious activity. This cannot be said of other forms of capital punishment. For this reason search has been made for an ideal form of punishment capable of suddenly and definitively destroying life. Most naturally, attention has been turned to electricity as a means of accomplishing the desired end. Public opinion has inclined toward the substitution of *fulguration* for the guillotine. But our knowledge of the mechanism of death by electricity is still imperfect, and for this reason we are not justified in substituting it for a mode of punishment well known and definite in its application and effects. Death by it cannot be produced more rapidly or more surely than by decapitation. It is by its inhibitory action on the nervous system that electricity causes death; but decapitation possesses this influence in the highest degree. Decapitation has this advantage, that by relieving the nervous centres of the necessary blood, their restoration to activity becomes impossible; while after *fulguration* it is possible for consciousness to return. The only advantage of electricity over decapitation is, that it leaves the body intact.

There is another point to be considered; it is, that the separation of the head from the body offers a public proof of certain death; while in the other methods, especially in *fulguration*, simulation of death may occur. The only suffering connected with the mode by decapitation is moral agony which the fear of death may cause.

We have endeavored to sketch, as briefly as possible, the principal contents of Dr. Loye's interesting work. The subject is one of particular interest at the present time in France, and, in some of its bearings, has elicited discussion on this side of the Atlantic. The physiological features of the study are of special interest to the medical profession. The historical account of the subject is complete and full of interest.

The views of different writers are carefully presented and commented on. The results of the author's observations and experiments, and those of other investigators, are clearly described. Though the subject suggests the sensational, the investigation has been confined strictly within scientific bounds. The results obtained, besides advancing our knowledge of certain questions in human physiology, will help to relieve society of unnecessary disquietude, and enlighten popular opinion upon a subject concerning which there has been more or less misinformation.

W. H. F.

THE MOVEMENTS OF RESPIRATION. By MAX MARCHWALD, M.D. With an INTRODUCTORY NOTE by J. G. M'KENDRICK, M.D., LL.D. 8vo. pp. 171. London: Blackie & Son, 1888.

So seldom is it that a monograph originally published in German upon a physiological subject is reproduced in English that the book before us is a treat to those who wish to get an insight into foreign original research without taking the time to labor through an entire work in a foreign tongue.

The book before us is devoted not so much to the movements of respiration as to the respiratory innervation, and the author has, in conjunction with Hugo Kronecker, of Bern, certainly reached very instructive results from interesting studies. It is impossible in this short notice to give the results even as briefly as Marchwald sums them up at the end of the work. He supports the theory that the automatically acting respiratory centres send out impulses which if ungoverned produce simply incoördinated respiratory movements, and believes that the vagus nerve is endowed with the function of regulating these impulses, coördinating them and so directing them as to fully utilize them. The impulses, in other words, are sent out by the centre spasmodically and not rhythmically.

The book is wonderfully well illustrated by tracings and its value is greatly enhanced by their clearness and careful execution. One cannot help feeling surprised that a work so purely physiological should be republished, particularly in view of the labor of translation. The interest of Dr. M'Kendrick in such subjects undoubtedly is responsible for the effort made to give English readers a high-class original treatise, and we sincerely hope that all interested in nervous mechanisms, even elsewhere than that of respiration, may show their appreciation of the work. Many lines of original research open themselves after a perusal of its pages and questions of vital interest are answered with clearness and exactitude.

H. A. H.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

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STROPHANTHUS.

The number of articles which have appeared about *strophanthus* during the past year and a half is very large; notwithstanding such testimony to the great interest taken in this drug by both physiologists and clinicians its action and best application are still open to much question.

The sources and species of *strophanthus* are many: Fraser experimented with *strophanthus kombé*; others with *strophanthus glabre*, *strophanthus sarmenteux*, or some other variety. Besides this botanical confusion there are commercial frauds, such as the substitution of the Indian for the African variety, or a mixture of the active seeds with those which have already been impoverished by treatment with alcohol.

The chemistry of *strophanthus* is also ill-defined; extracts and tinctures of various strengths are used, and, even the *strophanthin* from *strophanthus kombé* is sometimes amorphous and sometimes crystalline, which may have either a lamellar or a needle-like shape. Further, the experiments with *strophanthin* from *strophanthus kombé* do not give results concordant with those obtained from the *strophanthin* of *strophanthus glabre*.

The results obtained by various experimenters who have studied the physiological action of this drug are also not in accord with each other.

M. Lemoine has found that by repetition of the dose a chronic form of poisoning may be induced not less dangerous than an acute toxic effect from excessive doses. After death from chronic poisoning in animals there is found a nephritis comparable to that resulting from an infectious origin.

In men suffering from nephritis an increase in the amount of albumin has been observed, and also hæmaturia has followed the use of *strophanthus*.

As a cardiac drug it has been compared to *digitalis*, and by some vaunted as superior, in being less violent and more lasting in its effects upon the heart.

It is asserted, on the contrary, that strophanthus does not augment the heart's action, that it lessens the force of the precordial blow, and that the pulmonary second sound is diminished in intensity. That the vascular tonicities is diminished, and the heart is relieved by lessening the resistance in the peripheral bloodvessels.

Others assert that strophanthus is a cardiac tonic, but inferior to digitalis. It has also been classed as a renal irritant rather than as a cardiac tonic. Whether it be classed as a drug which acts upon the heart, the vessels, or the kidneys, from the practitioner's standpoint it is desirable to know what conditions call for its administration, and what the contraindications may be.

The most beneficial results are obtained in cases of asystolic, especially those which are accompanied by œdema. The contraindications would be a degeneration of the heart's muscle or nephritis, especially if accompanied by albuminuria.

As regards the diuretic value of strophanthus opinions differ. Fraser and Puis recommend it in the treatment of nephritis, and attribute its diuretic action to an irritation of the renal parenchyma. Others contest its usefulness in these affections. Others are not satisfied with the increase in urine thus brought about; on the contrary, they state that in chronic nephritis the benefit is counterbalanced by the danger of increasing the renal lesion. Further, the albumin is increased under the influence of this drug. There is reason, therefore, to doubt the desirability of using strophanthus as a diuretic, or even in cardiac diseases where there is albuminuria. Moreover, note should be taken whether hæmaturia is present or not, for it is aggravated, and sometimes caused by strophanthus.

Diarrhœa from strophanthus is a common phenomenon among the patients who have taken it, and is an indication of its non-tolerance.

The tincture is the preparation most frequently prescribed, though the extract of strophanthus and strophanthin have been used. At present we should hesitate to substitute strophanthin for the simple preparations of strophanthus.—*Gazette Hebdomadaire*, January 4, 1889.

CREOLIN.

A drawback of creolin is, that it causes irritation to mucous surfaces, as, in fact, do most antiseptics. A drop of a two per cent. solution placed on the tongue causes on the part touched a sensation such as would follow a slight burn. The sprays applied to the nares and the pharynx produce also a certain local irritation, and are especially disagreeable in consequence of the penetrating odor of the drug. Taken internally, a dose of a few drops in a potion, it produces an annoying sensation along the whole length of the œsophagus, and gives rise to a taste of creolin which persists during the whole day and produces eructations.

Externally, it may be used in solutions of one to two per cent. to wash wounds or instruments; as an application to the nares or pharynx, five to ten drops to a quart of water is a sufficient strength.

One of the chief advantages of this new antiseptic is said to be, that it is not poisonous; it has been given to dogs in amounts up to one and one-half ounces, and men have taken experimentally two drachms daily, without

serious trouble. On the other hand, a case is reported in a recent number of the *Gazette médicale de Paris*, by M. Rosin, where an injection into the vagina and uterus of a two per cent. solution caused vomiting, subnormal temperature, and death in collapse. The quantity of the liquid injected into the uterus in three days was from seven to eight quarts. This contained about four and one-half ounces of creolin.

As a disinfectant, creolin is efficient; according to Esmarch, a one per cent. solution rids one almost immediately of all bad odors, except its own, which is not agreeable, though better than that of carbolic acid.

In emulsions containing two and a half to five per cent., it is a powerful germicide.

It has been found serviceable especially in diseases of the nose, ears, and throat; Schnitzler recommends it in all affections of the buccal cavity caused by microorganisms; he has found it very useful in tubercular laryngitis.

As regards the internal administration of this drug, it is important to bear in mind the dangers of bringing a substance so irritating as creolin in contact with the stomach and intestines.—*Gazette médicale de Paris*, December 22, 1888.

Experiments made in the bacteriological laboratory at Königsburg, by Dr. WASHBOURN, appear to prove that creolin, though far less toxic than carbolic acid, yet possesses more distinctly poisonous properties than has been supposed.

PROFESSOR BAUMGARTEN also finds that creolin is a strong poison for the animal organism, but the poisonous dose is relatively large, so that the value of creolin as a local antiseptic and disinfectant is not prejudiced by his experiments, which only show that its internal administration must not be pushed too far.

The amount which would have to be absorbed from a wound would be so large that practically there would not seem to be any danger attending its use in dressings.

Experiments by BEHRING lead him to the conclusion that as an antiseptic it is three or four times weaker than carbolic acid, and that it cannot be relied upon as a disinfectant.—*British Medical Journal*, February 2, 1889.

NITRITE OF ETHYL AND SPIRIT OF NITRE.

DR. LEECH has contributed an interesting article on the comparative effects of spiritus ætheris nitrosi and solution of nitrite of ethyl.

Pharmacological considerations certainly render the practical identity of the two solutions very probable, Aldehyde, alcohol, and nitrite of ethyl are the principal substances present in sweet spirit of nitre. Paraldehyde is not present in sufficient quantity to exert any perceptible physiological effects. Spirit of nitre has long been a popular remedy for causing an increase in the urine and perspiration. As a diaphoretic, the solution of ethyl is as efficient as the spirit of nitre. The diuretic effect of both preparations does not appear to be high. In cases of difficulty of breathing, due to constriction of the bronchial tubes, and in cases of contraction of the muscular arterioles, the spirit and the solution were found to be of great and equal value; they

tend to prevent the onset of the original attack, and by dilating the arterioles, they relieve an overloaded heart.—*Lancet*, February 2, 1889.

SACCHARIN.

After the constant use of saccharin for over a year, DR. H. MACNAUGHTON JONES has never known any injurious effects to follow its exhibition, though several of his patients have substituted it for sugar altogether in their food.

The great mistake generally made with all preparations of saccharin is that the intensely sweetening property of saccharin is overlooked and too much is used, both for purposes of diet—as when it is added to tea or coffee—and when it is prescribed in mixtures, powders, etc.

It has been found useful in disguising the taste of quinine, muriated tincture of iron, antipyrin, salicylate of soda, salicin, the oils of copaiba and santal (either of these oils emulsified by the compound powder of almonds in which the acacia has been increased by twenty-five per cent. and the sugar replaced by an equivalent of saccharin, forms a mixture that is comparatively palatable, and owing to the antiseptic property of the saccharin it keeps much longer than one made in the other way); its utility in emulsions as a preservative is very great, and it is noteworthy in the case of cod-liver oil, guaiacum, hydrastis, cascara sagrada, and chloride of ammonium.

A palatable biscuit for diabetics may be made from gluten flour, 11.5; butter, 2.75; eggs, 8.5; saccharin, 0.01625 in each biscuit.—*Lancet*, February 2, 1889.

PROF. ATTFIELD, one of the editors of the last edition of the *British Pharmacopæia*, has been estimating the place of saccharin in pharmacy, and he has published some thirty galenical formulæ in which saccharin replaces sugar, either without altering the strength of the preparation in any way, or else so modifying it that the saccharinated compound may be termed “concentrated.” In the former case the place of syrup is taken by powdered tragacanth, or, in special instances, by gluten.

Prof. Attfield regards the advantages of saccharin as fourfold. It enables many medicinal confections, powders, and lozenges to be given in comparatively small bulk. It is able, by the intensity of its sweetness, to mask the nauseous taste of many drugs; it is not liable to ferment, and hence will yield permanent preparations in place of those made with sugar, which would frequently spoil, especially if submitted to high temperatures in transport. Lastly, the advantage of “sweet,” but not “harmfully sweet,” is once more urged. The slight solubility of saccharin has been so often remarked upon that good service is rendered by the description of a form of “soluble saccharin,” and by the formula for a simple solution of saccharin of the same degree of sweetness as the syrups of the *British Pharmacopæia*. The nomenclature adopted for the various formulæ is admittedly open to serious objection, owing to the confusion likely to arise between saccharium and saccharine.—*Lancet*, January, 1889.

MYRTOL AS A DISINFECTANT.

PROF. EICHHORST is of opinion that myrtol will leave all other disinfectants in the background in safety and quickness of action. Myrtol is repre-

sented by that part of myrtol oil which comes over between 160° and 170°. It is a clear fluid of aromatic and penetrating odor, which can be conveniently administered in gelatine capsules. French authors have recommended it in bronchial catarrh, and scattered observations have been made on its disinfecting properties; but a methodical use of this disinfecting substance has not been made, and it is not mentioned in various works on therapeutics.

After taking only one gelatine capsule the breath smells of myrtol within an hour, and the effect lasts from twenty-four to forty-eight hours; but in order to subdue putrid processes, two capsules, each containing two and a half grains, were usually given every two hours. The appetite improves under its use, and the expectoration and breath lose all offensive odor with remarkable quickness. The expectoration diminishes under its use, and the patient feels better. It is not considered to possess a specific action against the tubercle bacillus.—*London Medical Record*, December 20, 1888.

To act as a deodorizer and disinfectant in bronchitis with offensive expectoration and gangrene of the lungs, one may give two or three capsules every two hours, though with three capsules anorexia may follow. In some cases, after using only a few capsules, the offensive odor of the breath and expectoration disappears.—*Therapeutische Monatshefte*, January, 1889.

OUR EXAGGERATED ESTIMATE OF THE VALUE OF BEEF-TEA.

In a paper presented at the meeting of the British Medical Association, last summer, by THOMAS LAFFAN, the value of beef-tea is viewed from a double standpoint. First, as a nutrient; and, second, as a mere stimulant and flavorer. It is in the first category that it has been placed by a large number of the profession. Liebig states that the greatest care is taken to exclude from his extract all fibrin, gelatine, albumen, and fat. He further adds, that its component parts do not give strength where there is none, and that to extractives and salts is due all the value it possesses; that it is to be classed with tea and coffee; and that it neither economizes carbon for our temperature nor nitrogen for the sustenance of our tissues. As to the difference between ordinary beef-tea and his extract of meat, he merely claims for the latter that it contains less water than the former.

We have in beef-tea kreatine, kreatinine, carmine, inosite, and other quarternary products, which so entirely resemble, or are so nearly allied to those found in urine, that their small value hardly admits of question; and it is not a matter for surprise that there should be so striking a family resemblance in odor between the two. The saline matters alone, plus the hot fluid, are, therefore, left to play the most considerable, if not the only, rôle in the value of beef-tea.

Dr. Hassall, long ago, showed that 14½ pounds would be required to yield beef-tea enough to supply the nitrogenous daily waste of one individual, calculating that such waste amounts to 512 grains of urea and 21 of uric acid daily.

Experiments made on dogs have brought out the remarkable fact that they die sooner when fed exclusively on Liebig's extract than when left unfed.

There are three leading methods for manufacturing the article under discussion.

Under one method, the heat is kept below the coagulating point of albumen.

Under the second method, the heat is carried above the coagulating point of albumen.

Under the third method, the meat is merely macerated, and no heat at all is applied. This extracts a larger percentage of juice than is attainable by the application of heat.

When treated by cold water the meat yields up six parts per hundred, and under boiling water only three parts per hundred.

Another method proceeds on a different basis. One pound of meat to four pints of water is simmered for five or six hours. It is strained, and any portion not small enough to pass through the collander is further broken up until it is enabled to do so.

This article is infinitely richer than ordinary beef-tea, but where solid food is inadmissible, its administration requires further investigation.

An analysis of a sample of this preparation gave the following results:

Water	94.65 parts.
Albuminates and crystalline bodies, kreatine, etc.	4.25 "
Fats	0.20 "
Salts	0.90 "

Another sample extracted from the same part, under one of the old systems, was also analyzed. It was made from beef, the same in quality, but *two pounds* of meat to two pints of water, macerated for four hours, and subsequently simmered for six. No strainer was used, but the meat débris was excluded; the resultant was clear.

Water	98 48 parts.
Albuminates and crystalline bodies, kreatine, etc.	0.90 "
Fats	0.07 "
Salts	0.55 "

Kühne states that while the intestinal juice would dissolve raw albumen and fibrin, it would not act on boiled albumen and fibrin unless the latter were first subjected to the action of the pancreatic juice. When the latter, however, was the case, the dissolving process took place quicker than even when the meat was raw. Now taking the analysis of Hassall, who found only 22.1 grains of nitrogen in each pint of beef-tea (one pound to the pint) made under the boiling, and 41.1 grains made under the infusing process, and the further opinions of Séé and Liebig, it is quite plain that we have in beef-tea, properly prepared, no value whatever commensurate with the cost, and an insignificant nutrient for the sustenance of the sick.

If beef-tea then affords such small aid, what shall be used?

The first and chief resource in the way of liquid food is, of course, milk. The next substitute for beef-tea is minced raw meat. When we find this successfully employed in conditions of the system in which superficial ulceration of the intestinal membrane constitutes the essential feature, and where that membrane is still more acutely inflamed, as in the infantile cholera of summer, it is hard to set limits to the cases to which its employment may not be applicable.

Lastly, we have rectal alimentation, to supplement any deficiencies of mere

fluid ingesta, such as Leube's pancreatic emulsion. Milk will be found applicable to the great majority of cases, while one or more of the others may find their utility in a percentage of cases.—*Brit. Med. Journal*, January 26, 1889.

COCAINE IN CANCER.

After the removal of the entire left breast for cancer the disease reappeared. During three months the usual intense pain which accompanies such cases set in, and was not relieved by the ordinary remedies after a fair trial.

An ointment of cocaine, 1 in 20, had a marvellous effect. The pain was subdued almost immediately, and continually kept under control by its use. It was used for two months, there having been no occasion during that time even to increase the strength. The patient died without the least suffering.—*Lancet*, January 26, 1889.

MEDICINE.

UNDER THE CHARGE OF

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OF NEW YORK.

THE GEOGRAPHICAL DISTRIBUTION OF RICKETS, ACUTE AND CHRONIC RHEUMATISM, CHOREA, CANCER, AND URINARY CALCULUS IN THE BRITISH ISLANDS.

ISAMBARD OWEN (*Lancet*, January 19, 1889, 124) says that upward of 3000 replies have been received to the inquiry-papers sent out by the Collective Investigation Committee of the British Medical Association. The results of such inquiry must be taken in a general sense only, and not too much stress laid on points of detail. With these provisions they may be summed up as follows: 1. There was no district in the British isles in which acute and sub-acute rheumatism and malignant disease were not common. 2. Rickets, although not unknown in rural districts, was mainly a disease of towns and industrial regions, and especially of large industrial towns. It was rare in Scotland, the North of England, North Wales, and Ireland, with the exception of Ulster; more common in the rural districts of Ulster and the rest of England, and especially frequent in Cornwall, Kent, and North Essex. 3. Chorea was also mainly a disease of towns and industrial regions, though by no means unknown in rural districts. It was fairly evenly distributed in the rural portions of the four counties, rare at the seaside resorts, and, by exception, rather uncommon in Glasgow and in the south and the west of London. 4. The distribution of chorea was proportioned to the prevalence of acute and

subacute rheumatism. 5. Urinary calculus exhibited a tendency to affect the eastern coasts of the two islands; its chief seat in South Britain being the county of Norfolk, and in North Britain the angle of land above Aberdeen. It was less prevalent in the coal fields, and especially apt to appear in the Black Country.

THE PATHOLOGY OF PERNICIOUS ANÆMIA.

WM. RUSSELL (*British Med. Journ.*, January 12, 1889) says that the first question arising in the consideration of this subject is, whether the disease is the result of diminished formation of red corpuscles or of their increased destruction. It seems an accepted fact that the red marrow of the bones is at least one, if not the most important seat of the production of the red blood-cells, and that the liver is certainly one of the sites of their destruction. In 1875, Pepper and Tyson found that in pernicious anæmia the yellow marrow of the long bones was transformed into red marrow. It seems hardly possible that when there is this great increase in the red marrow, there should be a diminution in the formation of red corpuscles. Rather must we assume that there is an extraordinary effort on the part of this blood-producing tissue to meet the demand for red corpuscles, and that it consequently undergoes hyperplasia. We have next to consider pernicious anæmia from the side of increased destruction of the blood. When there is destruction of the corpuscles, the hæmoglobin decomposes and forms a yellowish pigment, which is hæmatin, or some allied substance capable of giving an iron reaction to ordinary tests. The iron present in normal red blood-cells cannot be demonstrated in this simple way.

To test an organ for decomposed hæmoglobin, a small portion of it is put for some minutes into a solution of ferrocyanide of potassium, and then transferred to dilute hydrochloric acid, whereupon a blue color will be developed if the decomposed hæmoglobin be present, and this will vary in intensity with the amount of the blood pigment. In a case of pernicious anæmia under his observation, the author found marked evidences of blood destruction in the liver, spleen, and kidneys. Other writers have also reported an increased amount of iron in the latter organ. It seemed desirable to make a series of observations on the iron reaction in cases of other diseases. For this purpose he examined the livers of forty-four cases of different affections, and the spleens and kidneys of some of these. The results showed (the figures are given) that in a considerable number of cases there were evidences of destruction of blood in the liver and spleen, and even in the kidneys; not constantly present in the spleen, and unusual in the liver.

He concludes, accordingly, that pernicious anæmia is one of certain conditions characterized by an increased destruction of blood corpuscles. That this destruction is due to the condition in which the blood reaches the liver, and not to the action of the liver itself, is shown by the fact that in all the cases in which the liver gave a very marked iron reaction the spleen did so likewise. The ultimate question concerns the nature of the blood condition which leads to this exaggerated destruction. It may be that some process in the elaboration of the corpuscles is defective, or that some blood purifying organ is at fault. What it is cannot yet be decided, and further pathological observation is demanded.

PROCURSIVE EPILEPSY.

LADAME (*Rev. Méd. de la Suisse Romande*, 1889, No. 1, 5) makes an exhaustive study of this disease, citing a number of authors not mentioned in the article of Bourneville and Bricon, and reporting an interesting case. As a result of his study, he concludes—

1. Procursive epilepsy is a form of disease in which the attack is manifested by an impulsive running forward, accompanied generally by a fit, with loss of consciousness, but rarely by aura.

2. This form of epilepsy is peculiar to childhood and youth.

3. It may last several years before being transformed into the ordinary form of epilepsy. During the transformation it may assume sometimes one form, and sometimes the other, but sooner or later, and sometimes suddenly, the change is accomplished.

4. It is impossible to localize accurately the anatomical seat of this form of infantile *haut mal*. There is certainly nothing to authorize the supposition that a lesion of the cerebellum may be the organic cause of procursive epilepsy.

5. The disease seems to develop preferably in those individuals who present a coarse lesion of the encephalon. It is probable, however, that, like all other forms of the disorder, it may manifest itself without appreciable organic lesion of the nervous centres.

6. Procursive epilepsy is frequently complicated by moral insanity.

ACROMEGALIA.

VIRCHOW (*Deutsch. med. Wochenschr.*, January 24, 1889) exhibited before the Berlin Medical Society a new case of acromegaly, and the skeleton from the case which Fräntzel reported a year before. The disease is to be classified as a partial giant growth (*Riesenwuchs*), though it is not yet possible, in the state of our knowledge, to make a sharp distinction between it and the universal giant-growth. It has been claimed that the beginning of the affection is connected with puberty, but Virchow denies this, and cites two cases, including the one exhibited by him, where it appeared quite early in childhood. It would seem in some instances as though heredity played some rôle in its production, but other cases show no trace of its influence. Nor had there in his patient been any early abolition of the sexual functions, since he had begotten six healthy children.

Besides the general overgrowth of the extremities and of the bones of the face, which constitutes acromegalia, there may be sometimes an hypertrophy of single parts. The author exhibited a plaster cast of a hand from such a case, showing an excessive overgrowth limited to the first and second finger. The question is sometimes raised whether acromegalia is not allied in some particulars to myxœdema; but while in the first affection the soft parts are hypertrophied as well as the bones, there is no instance of myxœdema recorded in which the bones were involved.

Comparison of acromegalia with general giant-growth shows many points of similarity, and other points of sharp differentiation. In acromegalia there is a marked disproportion between the length of the extremities and of other

parts. The author gives statistics to show that the ratio of the length of the feet and of the head to the total length of the body is decidedly greater in this affection than in the normal condition, or in the case of two giants to whom he refers. The cause of the disease is not clear. As it is evidently, for reasons which he explains, not to be included under leontiasis osseum, osteitis deformans, or arthritis deformans, it is best considered as an independent disorder.

CASEOUS CONCRETIONS OF THE TONSILS.

Under this title V. GAUTIER (*Rev. Med. de la Suisse, Romande*, 1889, No. 1, 21) describes the very abnormal distention of the crypts of the tonsils with cheesy matter. He knew of no literature upon the affection until the recent monograph of Jacobson came to his notice, containing a report of a case, and a bibliography of the subject. Jacobson calls it "Algosia faucium leptothricia," since it has been discovered that the caseous masses consist chiefly of leptothrix buccalis. He collected seventeen cases from German medical literature, and added three of his own observation. The presence of these accumulations is rarely attended by fever or even dysphagia. Gautier relates the case of a woman in whom these masses resembling perfectly white buttons, which formed one or two at a time on the tonsils, and after reaching the size of a pea or bean detached themselves and fell on the base of the tongue. There were absolutely no subjective symptoms, except a slight malaise felt one or two evenings before the day on which the masses were discharged. She sought treatment on account of the very unpleasant odor which the liberated substance possessed. A portion examined microscopically on one occasion consisted of a dense, felt-like mass of leptothrix threads with cellular débris. The treatment consisted in incising the anterior wall of the crypts, emptying them, and cauterizing them with a solution of chromic acid.

RECURRENT PNEUMOTHORAX.

SAMUEL WEST (*Brit. Med. Journ.*, Jan. 12, 1889) reports an interesting example of this condition. The patient, an apparently healthy man of twenty-two years of age, had for some days suffered from shortness of breath, which he had first noticed on getting out of bed in the morning. Physical examination of the chest clearly revealed the presence of pneumothorax without effusion, and in the process of resolution. The dyspnoea was so slight that the patient rebelled against being kept in bed. The subsequent history of the case is simple, as recovery went steadily onward, and in the course of a month the difference between the two sides of the chest was scarcely perceptible. The previous history of the patient was good, and there was no disease to which the development of the pneumothorax could be attributed. The interesting part of the story is, that about six months before, while walking quietly, he had been suddenly seized with pain below the clavicle, shortness of breath, and cough, incapacitating him from all hurry and great exertion for about a fortnight. About three months after this he again became short of breath on the morning after playing football violently, and continued so for a month. These two previous attacks were stated to have

been exactly similar to the one observed by West, and the strong probability is that they were due to pneumothorax. The authors refers to the case reported by Gabb, in the *British Medical Journal*, some months previously, and states that these two cases show that a patient may have repeated attacks of pneumothorax and yet recover. He also calls attention to two facts well established but not generally known, and which this case illustrates; namely, that pneumothorax not infrequently occurs in the apparently healthy, and that it may develop in a latent, insidious way, without the violent symptoms often seen.

TREATMENT OF SUFFOCATIVE PNEUMOTHORAX BY PERMANENT THORACIC FISTULA.

BOUVERST (*Bull. Méd.*, 1889, No. 7, 107) has recently witnessed two cases of pneumothorax which he denominates "suffocative," in which the chief symptom consisted of an intense dyspnœa increasing constantly without any remission, and terminating rapidly in death by asphyxia. Both the clinical and post-mortem examinations showed that the air in the pleural cavity was under a high degree of tension. The author says that it is impossible that the increased tension can be due to air entering the pleural cavity during inspiration, as has been stated by various writers, and claims that the entrance occurs during cough, when the tension in the bronchial tubes is very greatly raised. Cough is consequently very dangerous in pneumothorax, and is to be combated by full doses of opium; but in cases of suffocative pneumothorax this will be insufficient. In such a case the indication is to evacuate the air, just as one would evacuate a huge pleural effusion. A simple puncture is not enough, as the air at once begins to reaccumulate. The author therefore recommends and has practised the making of a permanent fistula, leaving the canula in position. This must be done under antiseptic precautions, using a canula 4 cm. long and 3 mm. in diameter. An antiseptic dressing should be applied, in order to prevent, as far as possible, the formation of a pyothorax.

THE GRAPHIC RECORD OF PHYSICAL SIGNS IN THE INVESTIGATION OF HEART DISEASE.

A very valuable article on this subject is contributed by A. E. SANSOM (*Lancet*, Jan. 19, 1889). He lays great stress on the necessity of precision of observation and of precision of record, but says that this is to be attained with the expenditure of as little time as possible. The dress must be completely removed from the chest, and this protected from cold by a warm wrap. The patient must then be placed in such a position that both sides of the thorax are presented in like conditions. As the impressions conveyed to the ear are more fleeting than those recorded by the eye, it is necessary to indicate visibly the physical signs discovered; and for this purpose an aniline pencil, or, still better, a dermatographic pencil, may be used.

It is carefully noted by *inspection* whether the apex beat is visible, and if so, dots are to be made with the pencil over the area where it is observed. Pulsation in the epigastrium, regions of the aorta or pulmonary artery, or in the vessels of the neck, is denoted by the sign "pn" at the point where it is seen.

If venous pulsation, write "V pn;" if with the pulsation there is retraction of the thoracic wall, use the sign "S retrn." A notable bulging of any portion of the surface can be outlined by dots.

Coming now to *palpation*, the area of the apex-beat, as indicated by the application of the tip of one finger, may be outlined by short broken lines, in contra-distinction to the dots used for inspection. Pulsations felt elsewhere are to be recorded in the same way. The position of a thrill is indicated by a serrated line. If the thrill is presystolic, it comes to an abrupt end at the beginning of the ventricular systole, thus differing from the systolic and diastolic thrills. This abrupt ending may be indicated by a vertical line at the termination of the horizontal serration; the length of the latter having some relation to the duration of the thrill. The use of the finger as a pleximeter for *percussion* is wanting in precision. The author therefore employs a vulcanite pleximeter in the shape of an inverted "T." The portion of this applied to the chest measures one and a half by one-half inch; the slender vertical column is one and a half inches high, and the upper cross-piece measures three-quarters by three-eighths of an inch and is set parallel to the lower plate. In using it, this lower plate is pressed against the chest wall by the tips of the fore and middle fingers. The mind is to be fixed on *vibrations*, whether heard or felt by the finger-tips, and at the spot where the vibrations are sensibly modified a line is to be drawn with the pencil. By approaching the heart from different directions, and uniting the marks thus made, the outline of the cardiac dulness is determined and denoted. In many cases the border of the right ventricle can be distinguished from the liver. The author claims that this method of percussion is of the greatest accuracy, as has been confirmed by numerous post-mortem examinations. He states the limits of the heart as shown by it, and explains the diagnostic and prognostic indications of some of the changes in the area of dulness, as well as the differences in the character of the note heard over different portions of this region.

For *auscultation* it is frequently better to employ a double stethoscope. Any accentuation of any of the normal sounds can be expressed by the sign + within the area in which such accentuation is noted. All murmurs are also to be indicated. An "S" denotes the presence of a systolic murmur at the point at which it is placed, and an arrow drawn on the chest shows the direction in which this is propagated. In many cases it is advisable to map out the area of audibility by short broken lines. A diastolic murmur is indicated by a "D" placed at the point of maximum intensity. PrS would denote a presystolic murmur, and broken lines should be used to show the area in which it is heard.

Having now made on the chest a map or graphic record of the signs observed, it remains to copy such a record for reference. To accomplish this the lines and signs delineated should be copied on a small piece of tissue paper is now gently pressed over the surface, and on the oil will be readily removed. Placing this on a small piece of paper with a pencil and a permanent ink. By the use of a camel's-hair brush and a small piece of tissue paper a copy may be made. The outline

sequent examinations can be compared with this, when any changes will be at once noticed.

ON HETEROLOGOUS STRUMA OF THE KIDNEYS.

STRÜBING (*Deutsch. Arch. f. klin. Med.*, B. 43, H. 6, 599) reports two cases of struma of the kidney and reviews the literature of other reported instances of it. He sums up his conclusions by defining renal struma (which in reality springs from tissue of the supra-renal bodies) as characterized by the formation of large cysts filled with peculiar bloody and fatty contents. Viewed from a clinical standpoint it shares the characters of other malignant tumors of the kidney, and presents the same difficulties of diagnosis. In such cases the urine is usually free from abnormal constituents, but may, at times, wash down with it the contents of the cysts and softened tissue. The continued presence of serum-albumin, not due to the evacuation of a cyst, indicates a complication, whose cause is to be sought for. Both kidneys can be the seat of the new formation, though this is unusual. It will depend on the degree of injury to the secretory parenchyma, whether the series of secondary changes in the organism appear which are produced by chronic insufficiency of the renal activity. Renal struma produces metastasis. A puncture of the cyst is only to be performed for diagnostic purposes, but the question of total extirpation of the diseased kidney is to be entertained, if the struma, as is usually the case, is confined to but one kidney, and there is no reason to suppose that the secreting parenchyma of the other has been injured by inflammatory processes or the like. This radical operation should be undertaken as soon as possible, in consideration of the ability and tendency of the struma to form metastasis.

ATROPHY OF THE GASTRIC MUCOUS MEMBRANE.

GEORGE MEYER (*Münch. med. Wochenschr.*, Jan. 29, 1889, 83) has found this condition in a considerable number of stomachs, the atrophy being complete in four cases and progressing in the others. Etiologically, the atrophy arises from a chronic catarrh, which is either primary or secondary to a malignant growth or to toxic gastritis. The process may be one of two kinds. First, it may be of a degenerative nature, consisting of an infiltration of round cells, chiefly from the surface, so that the glands are forced to lie obliquely or even horizontally, and are, finally, partially obliterated and replaced by a formation of cysts, with only here and there a remnant of glandular structure. The *muscularis mucosæ* is thickened, and connective tissue projections from it extend toward the mucous surface. Secondly, the process may be of the character of a formative irritation of the intra-glandular tissue. In this the naturally scanty connective tissue grows thicker, strangles the glands, leaves a network with large meshes, and causes a disappearance of the *muscularis mucosæ*. These two processes, the parenchymatous and the cirrhotic, are often commingled. The author suggests the term "phthisis ventriculi," on the ground that the other names applied are unfitting.

The gastric wall may be of normal thickness, thinner than it should be, or greatly thickened. The author reports a case in which this last condition obtained. The process begins, as stated, usually on the free surface of the

mucous membrane, leads to the formation of cysts, and, finally, to a broad band of connective tissue. All traces of the glands finally disappear. Sex appears to have little influence in its production, but it is most apt to develop in the latter years of life. Carcinoma, even in distant parts of the body, plays an important rôle in its etiology. The duration of the disease appears to be between nine months and two years, as nearly as can be determined. The symptoms, though not constant, are dilatation of the stomach, disappearance of the natural secretion and of mucus, diminution of the gastric movements, cardialgia. All these symptoms attend chronic gastritis, carcinoma, and neuroses.

The diagnosis is often impossible, but an important symptom is the good general condition and the absence of emaciation, which indicates more than an outward relation to progressive pernicious anæmia, especially when digestive disturbances attend the latter affection.

The prognosis is unfavorable, and therapeutics can offer little, though lavage with hydrochloric acid and arsenic may be tried.

In view of what has been said, the author deems it important, 1, that all patients with carcinoma of any organ, and who present any symptoms of pernicious anæmia, have the functions of their stomach tested; 2, that after death the organ be histologically investigated; 3, that the condition of the vagus, sympathetic, and Auerbach's and Meissner's plexus be studied.

INTERMITTENT AND LATENT ALBUMINURIA.

The following is an abstract of the conclusions drawn by DR. GEORGE JOHNSON, expressing the main points of his paper in the *British Medical Journal* of February 2, 1889, and embodying his views published in previous articles.

1. The presence of albumin in the urine, though small in amount and occasionally intermittent, is always pathological.

2. The practice of testing the urine in all, even the most trivial, ailments has revealed albuminuria in many youths and adolescents exposed to cold, wet, and over-fatigue, but who have not lived long enough for the ultimate evils of a neglected albuminuria to become developed.

3. The albuminuria of persons in apparently good health has no such special features as to require the application of such misleading terms as "physiological," "functional," "cyclical," and the "albuminuria of adolescence." It is of common occurrence in each sex and at any age.

4. In almost all instances these cases of albuminuria may be traced back to some exciting cause.

5. Nearly all cases of acute nephritis pass through the stage of intermittent albuminuria in their progress toward convalescence; and conversely, most cases of intermittent albuminuria may be traced to an acute nephritis.

6. Intermittent albuminuria, though having existed for years, is a curable condition, if only its exciting causes can be ascertained and counteracted by appropriate treatment. The neglect of such means, however, may convert it into persistent albuminuria, and this ultimately results in fatal degeneration of the kidneys.

7. Since albumin may exist in the urine of persons in apparent health, the

importance of examining the urine of all patients, and all applicants for life insurance, is obvious.

8. Since albumin may be present at one portion of the twenty-four hours, and absent at another, it is necessary to test the urine, not only after rest in bed and before breakfast, but also after food and exercise.

With regard to the question of albuminuria in life insurance, each case must be considered individually. The author, however, considers that no prudent man would recommend that an individual with a trace of albumin in his urine be accepted at an ordinary rate of premium.

SURGERY.

UNDER THE CHARGE OF

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TETANUS.

At a recent *séance* of the Société de Thérapeutique, M. GUELPA, after reviewing the history of the scientific study of tetanus, formulated the following conclusions as the result of his own observations made in conjunction with M. Weber. First, tetanus is an infectious disease. Second, although the horse is one of the animals most apt to contract this disease, it is certain that, contrary to the opinion of Verneuil, tetanus is not of equine origin; a telluric origin appears more probable, but that designation is also too restricted. We are probably within limits in admitting simply a bacterial point of departure. Third, tetanus is not the direct effect of microbes, but the consequence of poisoning through substances secreted by them. Fourth, at least during the first tetanic manifestations, the growth of the bacilli remains limited to the region of the wound. It is only later, and then very rarely, that there is any generalization of the bacillus in the organism. Fifth, as regards treatment, there are three indications: the destruction of the seat of lodgement of the bacilli; the elimination of the products of those microbes; the sedation of the nervous system. The first may be accomplished by vigorous curetting, or even deep excision, and by the use of lotions and dressings with strong solutions of sublimate (5 to 10 to 1000), or, perhaps still better, by the use of strong solutions of nitric or sulphuric acid. The elimination of the soluble poisons secreted by the microorganisms will be favored by the very free use of diuretics and diaphoretics, or by hypodermics of pilocarpine, which appears to have a specific action upon the bacillus of Nicolaiez. Finally, large doses of chloral will serve as the best sedative for the nervous system.

At the *Académie des Sciences*, M. BASSANO reported some observations upon the attenuation of the tetanic virus by passing through the cobaye. He has observed that animals inoculated with infectious earthy materials succumb

in about four days. Those inoculated with pus from the first died at the end of one day, those inoculated with pus from the second series perished in forty-eight hours, while the pus from the latter does not cause death for about five days. He recommends the most minute disinfection of all wounds, no matter how insignificant in appearance, whenever there is the slightest reason to suppose that they have been infected.

SYPHILITIC REINFECTION WITH PERSISTENCE OF PREVIOUS SYMPTOMS.

DR. AUGUSTO DUCREY reports (*Giornale Italiano delle Malattie Veneree e della Pelle*, December, 1888) the case of a woman, forty-six years of age, who, many years previously, had contracted syphilis while in intimate relations with a woman in the early secondary stage of the disease. There was a complete history of full secondaries, roseola, characteristic pains, adenopathy, etc. Shortly after she married, and, with the exception of a soft sore contracted from her husband, remained healthy for ten years. At the end of that time the husband, after an impure connection, developed an indurated sore, followed by indolent buboes, roseola, mucous patches, etc., and soon after she presented herself for examination. She showed a characteristic gumma of the scalp, multiple cicatrices of pustular and tuberculo-ulcerating syphilides, and atrophic scars of recent date following the reabsorption of dry tubercles, while, at the same time, she showed a specific cicatricial induration of the right labium major, universal poly-adenopathy, a maculo-erythematous syphilide on the trunk and limbs, mucous patches on the soft palate and the velum, syphilitic fever, and rheumatoid pains. The coincident infection of the husband, of course, threw much light on the case. The gummosus and tubercular character of the old lesions was unmistakable, the only possible lesion with which they could have been confounded being lupus, from which they differed widely in the character of the sores, the crusts, the age of the patient, and the history of the case. The recent eruption became finally a very widespread small pustular (acneform) syphilide, which involved every portion of the cutaneous surface but the face; the osteocopic pains became intense and unbearable; ulcerating mucous patches developed, together with extreme tumefaction of the inguinal glands, and a severe iritis of the left eye. At the same time the sore upon the scalp deepened and assumed the unmistakable characters of a deep gummatous ulceration. (The condition of the scalp and the general surface at this time is illustrated by two chromo-lithographs.) The case resisted treatment for some time, but was finally cured by means of hypodermic injections of corrosive sublimate. Dr. Ducrey draws the following conclusions:

1. Syphilitic reinfection is possible.
2. It may occur even during the existence of tertiary symptoms due to the preceding infection.
3. The pathological effect of the second inoculation may be precisely those of an ordinary syphilis, with the same succession of identical symptoms; or the second attack may even be one of special gravity.
4. The reinfection of a subject of previous syphilis is not a certain proof that he was cured at the time of the second infection, and therefore the possibility of reinfection is not decisive evidence of the curability of syphilis.

CEREBRAL ABSCESS.

VON BERGMANN, in a recent address on cerebral abscesses (reported in *The Medical Press and Circular*, January 2, 1889), stated that it should be borne in mind that cerebral abscesses are always secondary. In a table of 70 cases given by Baer, chronic suppurative otitis was the cause in 55 instances. In other cases the abscesses originated in bony inflammation of other parts of the skull, or in injuries attended with hemorrhage, or were metastatic. When in a case of chronic suppuration of the middle ear fever comes on, evidence of mastoid disease should be looked for—tenderness, swelling, redness, local œdema, etc. If these symptoms are absent, then evening fever becomes an important indication of deep suppuration, perhaps even in the *cavum cranii*.

If the symptoms of shivering, heightened temperature, disturbed digestion, nausea, retching, and vomiting, which sometimes become worse in the evening, are an indication of suppuration generally, we must seek further to determine whether the suppuration is such that it, possibly by its volume, causes other symptoms—for example, whether in the case of being intracranial, it causes increase of intracranial pressure. In order to diagnosticate cerebral abscess, therefore, we search not only after symptoms of suppuration, but also for signs of cerebral pressure.

It is of importance when, although the temperature of the body rises and shivering comes on, in spite of these febrile symptoms, the pulse shows itself positively less frequent. If, in addition, there is violent headache, a special significance attaches to the febrile movement, which may then indicate an abscess in the interior of the skull cavity, and this diagnosis is, of course, vastly strengthened in the presence of localizing symptoms.

It may be made, therefore, especially in those cases in which injury of the parietal or motor region of the brain has taken place, and in which, in the course of time, symptoms like those above mentioned have added themselves. It is now sufficiently well known, since the brain has been so much experimented on, that large slices can be removed from the temporal lobes without any function of the body necessarily suffering.

Von Bergmann operated on the case which gave rise to these remarks—one of otitis media—and evacuated a large quantity of pus. He inserted a drainage tube and packed around it with iodoform gauze. The tube was gradually withdrawn, the symptoms disappeared, and the patient entirely recovered.

MICROBES IN CONGENITAL DERMOID CYSTS OF THE FACE.

VERNEUIL reports (*Revue de Chirurgie*, Jan. 10, 1889) four observations upon dermoid cysts, in three of which microorganisms were discovered. Two of them were cysts of the floor of the mouth and one a cyst of the skin of the brow. The microbes were of variable forms, susceptible of cultivation, and when inoculated in mice did not seem to possess any pathogenic property. The authors called attention to the following facts: first, cysts in which microbes were found, all of them usually indolent, were when they came under observation rapidly growing. It is possible that the entrance of the microbes may have been a factor in this growth, the causes of which are but little understood. Such cysts often remain stationary for many years. Second,

the dermoid cysts of the face entirely develop and are completely closed during intra-uterine life, and can receive the microbe which they contain only through the medium of the vascular system. Third, the presence of microbes in such cysts failing to manifest itself by any subjective symptoms furnishes a new example of what Verneuil has described under the name of latent microbism.

ŒSOPHAGOTOMY AND PLEURAL SECTION FOR FOREIGN BODIES.

DR. GEORGE FISCHER reports the following case (*Deutsche Zeitschrift für Chirurgie*, December, 1888):

A forester, aged fifty, who had been affected with chronic laryngeal catarrh for over ten years, swallowed a fragment of bone while at supper. His own efforts to remove the bone were futile. He immediately sought medical advice, and the physician passed a sound with a sponge point, but failed to discover any foreign body, even with the aid of the laryngoscope. The symptoms of choking, however, soon disappeared, and the patient returned home. Three weeks later pain in the throat and difficulty in swallowing were complained of, and at the same time the patient was annoyed by most offensive sputa. Upon examination a slight swelling was observed at the back of the pharynx. An incision was made in the swelling but no pus found. The copious discharge continued, and was extremely offensive. The case was diagnosed as perforation of the œsophagus by a foreign body, together with retro-œsophageal abscess.

Œsophagotomy was performed soon after; the tissues were found dense and the lymphatics enlarged, but there was no point of ulceration. Great difficulty was experienced in finding the œsophagus. After cutting through the omohyoid muscle the operation had to be continued with great care, and even though the operator had reached so far that he could plainly feel the spinal column through the opening of the wound, yet he was unable to locate the œsophagus until a large ball-pointed sound had been introduced. The œsophagus was then opened and a large drain tube (unperforated) was inserted into the opening, and through this milk was poured into the stomach. The whole wound was then packed with iodoform gauze and over this a wad of iodoform dressing. The drainage tube was left protruding from the dressing. During the operation no foreign body was found. For three weeks following the patient had no symptoms of fever. Although the wound healed well, and in spite of the absence of fever, the patient's strength gradually decreased, and the copious discharge of offensive sputa grew no less.

After the third week fever set in, the patient was troubled with cough, and complained of a pain in the back; a slight râle could be heard in the back over the lower extremity of the right lung. Percussion was painful, yet no dulness, bronchial breathing, or pleuritic murmur could be found. Three days later an opening was made in the pleural cavity, and a small piece of rib was resected; a large amount of horribly fetid and greenish-yellow pus was discharged, a drainage tube inserted, and the wound treated antiseptically. The patient died on the day following.

In the autopsy the wound of the œsophagus was found to be almost entirely healed; the right lung greatly adherent; a putrid, fibrous deposit covered the lower lobe. In this was a cavity of about two inches in diameter which

was filled with offensive pus. The left lung was free and slightly œdematous; no foreign body was found in either lungs or œsophagus.

The author's conclusion was as follows: A septic process had proceeded in two directions. First, it showed itself as septic phlegmon of the throat; secondly, a putrid bronchitis with subsequent gangrene of the lungs. He claims that the septic condition of the throat was cured by the operation of œsophagotomy. In conclusion, the operator gives a table of œsophagotomies performed for the removal of foreign bodies. One hundred and twenty have been recorded, eighty-seven of which resulted in recovery and thirty-three in death. This shows a mortality of nearly twenty per cent.

LAPAROTOMY FOR THE EXTRACTION OF A FOREIGN BODY FROM THE PERITONEAL CAVITY.

LE DENTU reports (*Le Progrès Médical*, January 12, 1889) a case in which a wooden spoon having been swallowed, the stomach was perforated, and the spoon passed into the peritoneal cavity in from twelve to fifteen hours after the accident. The perforation occurred on the level of the greater curvature, and the foreign body escaped between the two anterior layers of the epiploon. It was thought that this explained the rapid cicatrization which prevented the subsequent passage of the contents of the stomach into the peritoneal cavity. The operation showed that no peritonitis had been developed. Either the stomach did not contain any pathogenic germs, or the foreign body freed itself during its passage from those which it brought with it. A gastrotomy was first performed, as nothing in the history of similar accidents led to the suspicion that perforation of the stomach could possibly take place in so few hours. In the absence of symptoms indicating the presence of the foreign body elsewhere, it was logical to seek it in the stomach at first. The result was excellent.

HEPATIC SURGERY.

MR. KNOWSLEY THORNTON reports (*British Medical Journal*, Jan. 5, 1889) six additional successful cases of operations on the liver and gall-bladder. In three of these there had been previous perforation of the gall-bladder and the formation of abscess; one was a case of hepaticotomy for hydatids; in another there was impaction of a stone at the junction of the cystic with the common duct; one was a cholecystectomy following a fruitless attempt to dislodge impacted stones in the ductus choledochus; all recovered.

In the *Berliner klinische Wochenschrift* of January 28, 1889, DR. W. KÖRTE begins an elaborate review of the literature of the surgical treatment of diseases of the gall-bladder, taking up the various reported cases and considering the indications for operating, the methods employed, and the results. The paper is not concluded in this number.

MUCOUS CYST OF THE SPLEEN.

MR. J. F. HASWELL reports (*Liverpool Medico-Chirurgical Journal*, January, 1889) the case of a patient who died of cancer of the pylorus, and in whom at the autopsy an interesting condition was observed.

A fulness of the left hypochondrium had been noticed for some time previous to death, and gave on palpation the sense of fluctuation in a smooth-

walled tumor. This was punctured with an aspirating needle, the only result being a small quantity of whitish debris, which, examined microscopically, was found to be composed of fatty globules and cholesterin crystals, with a few granular red bodies. After death the left hypochondrium was found occupied by a large, tense, elastic swelling with smooth, lobulated walls; this was adherent to the spleen, and the pancreas passed along its under surface. Its weight, with the spleen attached, was three and three-quarters pounds (spleen weighed four ounces). Its length was twelve inches, and its breadth five inches. On opening it, semifluid pultaceous matter exuded, mostly in rounded masses of a dirty yellow color; among these were clear, round, jelly-like globules, about the size of a walnut, out of which, when punctured, a clear fluid ran, leaving a collapsed cyst wall. The same microscopic characters of the contents were noted as before mentioned, and no trace of echinococci detected. When the spleen was cut in two, a smaller cyst of similar appearance, with thick fibrous wall, was found in its substance, entirely surrounded by splenic tissue, and near the edge where the other larger cyst was attached. The wall of the large cyst was composed of dense, fibrous tissue, with calcareous plates in places, and there was no line of demarcation between the splenic capsule and the cyst wall.

Cysts of the spleen are so extremely rare that this one appears worthy of record. A very similar one (recorded by Cornil and Ranvier) was met with by Péan, but it seemed to have been larger and to have contained liquid.

PERFORATION OF THE BLADDER IN PYOSALPINGITIS

REVERDIN reports the following case (*Revue de Chirurgie*, Jan. 10, 1889): A woman twenty-three years of age, who had had a gonorrhœal vaginitis in 1882, and who had had one child and one miscarriage, presented herself for examination, and was found to have a large fluctuating swelling in the left iliac fossa descending into the vaginal cul-de-sac. There was a purulent endometritis, and an exploratory puncture above Poupart's ligament revealed the presence of pus. A trocar was thrust through the vaginal cul-de-sac and a large quantity of purulent matter was evacuated. The trocar was allowed to remain in place, antiseptic injections being employed throughout. The following day, drainage being imperfect, the trocar was replaced by a large rubber tube, which, however, became displaced on the fourth day, necessitating a new incision. This caused profuse hemorrhage from one of the arteries of the broad ligament, which could be arrested only by the use of the hæmostatic forceps. Laparotomy was then performed, an incision five inches in length being made parallel to Poupart's ligament. As soon as the abdomen was opened it was seen that the bladder was perforated; the posterior cul-de-sac was opened and the suppurating cavity drained through the vagina; the vesical perforation was stitched to the abdominal wall, a rubber tube being passed through it and brought out through the urethra. Afterward it was drawn into the bladder and a little later withdrawn entirely. The hypogastric fistula then closed, the vaginal drain answering all purposes. The patient entirely recovered.

GONORRHOEA AND ITS RELATIONS TO SALPINGITIS.

DR. J. WILLIAM WHITE reports (*British Medical Journal*, February 9, 1888) a case of removal of the uterine appendages for disease consecutive to

gonorrhœal infection; emphasizes the difficulty of recognizing some forms of venereal diseases in the female; and discusses the views of Noeggerath, Sinclair, and other gynecologists, which he believes to be extreme. He arrives at the following conclusions:

1. Gonorrhœa in the male is an entirely local and thoroughly curable disease.

2. The so-called "latent" gonorrhœa is due to changes in the mucous membrane of the urethra which, while they may be due to the persistence of a specific microbe, are apparently explicable by other circumstances, namely, the delicacy of the mucous lining of the urethra, and the conditions of approximation of its surfaces during the intervals of micturition, which is here, as elsewhere, unfavorable to the disappearance of granular or injected areas, or of the traces of inflammation; the periodical passage along the canal of a secretion, the urine, which is especially liable by reason of changes in its constitution to become an actual irritant; the exposure of the whole region at times of erection to intense congestion of its vessels; the effect of gravitation, the proportionately excessive supply of blood to the region, and the absence of extravascular resistance due to the elastic character of the spongy tissue, all of which favor the persistence of any vascular engorgement or congestion left after a first attack of urethritis. When in addition we consider the frequency with which gonorrhœa produces submucous thickening at some point in the urethra, causing an encroachment on the calibre of the canal, and, from obvious mechanical reasons, the production of discharge, we can understand that many of the cases of "latent" gonorrhœa can be explained without reference to the existence of a specific poison.

3. While awaiting definite microscopical evidence upon the subject, it should not be forgotten that there are marked differences between gonorrhœa as we observe it clinically, and those diseases known to depend upon a specific poison. The absence of a definite period of incubation; the fact that it may be produced with all its characteristic symptoms by a variety of agents, chemical, traumatic, and infectious; that it predisposes to, instead of protecting from, a second attack; that it is associated only with the ordinary processes of inflammation, and that it may be reawakened or produced at will by mechanical irritation, seem strongly to differentiate it from most specific diseases.

4. It is quite possible, even if gonorrhœa does not depend for its origin primarily or exclusively upon the gonococcus, that under certain circumstances the suppuration which accompanies it may favor the development of these or other forms of bacterial life, which in such cases might greatly increase both its contagious quality and the probability of its rapid extension in the infected individual. These cases in women constitute the class which comes most naturally under the attention of the gynecologist, to whom, indeed, they have usually been referred by the surgeon or general practitioner. They do not happen, after all, with great frequency, and, when they do occur, are by no means followed in all, or even in the majority of instances, by the serious and alarming sequelæ which have been described.

5. In many such cases a line of treatment which includes rest in bed, elevation of the pelvis, counter-irritation, hot antiseptic vaginal injections, and anaphrodisiacs with arterial sedatives, will result in cure.

6. In some instances gonorrhœa undoubtedly produces consecutively en-

docervicitis, tubo-ovarian abscesses, and pelvic peritonitis, and necessitates a resort to operation, but these instances are comparatively rare or exceptional.

SYPHILITIC CERVICAL SPONDYLITIS.

PROF. BRED ACHILLE (*Giornale Italiano delle Malattie Veneree e delle Pelle*, December, 1888) reports the case of a man fifty years of age, the subject of old syphilis, with adherent cicatrices of the scalp, the neck, and the supra-clavicular and deltoid regions consecutive to old gummata, and with contraction of the right lung resulting from a specific interstitial pneumonia. The posterior pharyngeal wall was swollen and projected forward to the level of the palato glossal folds. Pressure on the head, on the lateral aspect of the neck, and especially on the wall of the pharynx through the mouth, with counter-pressure on the cervical spinous processes, gave rise to great pain. The painful region was that of the bodies of the third, fourth, and fifth cervical vertebrae; the former was especially prominent and tender. Flexion of the head on the chest was painful, extension still more so, and the movements of rotation gave rise to exquisite suffering. Mercurial inunctions and full doses of the iodide of potassium resulted in subsidence of these symptoms; leaving, however, a noticeable tumefaction about the spine of the third cervical vertebra, which remained for some months slightly tender upon pressure.

Achille reports, also, an interesting case of spontaneous fracture of two or more ribs, as a sequel of specific osteitis.

THE PERSISTENCE OF THE REGENERATIVE POWER OF NERVES.

PROF. C. VANLAIR (*Archives Roumaines de Méd. et de Chirurg.*, January, 1889) records the results of his investigations into the effect of second operations upon the same nerves, and concludes that when the integrity of a nerve has been reëstablished after complete division, a second resection may be followed by a second and equally complete regeneration. He formulates his conclusions as follows:

It is not impossible to obtain experimentally the reproduction of the same nerve several times in succession. Outside of unforeseen accidents, the only obstacle to these multiple regenerations consists in the endoneurial thickening of the peripheral segment, the thickening occasioned by the excessive multiplication of the sheaths of Schwann, but this difficulty is easily overcome by the centrifugal pressure of the new fibres. It is, besides, more than compensated for at the time of the second reproduction by a considerable increase in their power of proliferation.

As to the reproductive ability of the nerve, it is virtually inexhaustible. One can even say that its activity increases as it is subjected to new proofs. In other words, then, the nerves possess the faculty of reproducing themselves indefinitely, just as do the connective and bony tissues. They can always repair any loss of substance, provided they find a suitable conductor. There is thus a demonstrable force which the experimenter can dispose of at his will, and which, well directed, will constantly produce its effects, so that the regeneration of nerves in the last analysis is subject to two conditions: on one side, a *vis medicatrix naturæ*; on the other hand, mechanical influences, which, according to their employment in one way or another, may aid in a reparative process, or render it ineffective.

OTOLOGY.

 UNDER THE CHARGE OF

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 A STUDY IN PHYSIOLOGICAL ACOUSTICS.

MR. J. A. MALONEY, of Washington, D. C., has conducted "a line of experiments to obtain, if possible, true graphic delineations of the voice" (*New York Medical Journal*, November 17, 1888). By perfecting his recording mechanism he has obtained the best records we have ever seen. He has shown most clearly, the number of vibrations to the inch, of the test-words employed, the entire length of letter- or word-wave, the total number of vibrations to each, and also the depth of imprint.

He proposes to apply these results in a second set of experiments, to solve some of the mysteries of audition, and also to obtain clues as to the nature of the changes in the middle ear when these test-words are heard imperfectly.

 COCAINE ANÆSTHESIA IN THE EAR.

DR. BARTH, of Berlin, at a recent meeting of otologists held in Cologne, September 18, 1888, presented, among other forms of anæsthesia, that by means of cocaine electric cataphoresis (*Archiv für Ohrenheilkunde*, Bd. 27, February, 1889). According to a suggestion of Wagner, he soaks a piece of cotton-wool with a solution of cocaine (8 to 10 per cent.), and fastening it to the positive pole places it upon the spot to be anæsthetized, and allows it to remain thus in contact for fifteen or twenty minutes. The negative pole is placed at the same time upon the nucha. By this mode of anæsthesia Dr. Barth has performed paracentesis membranæ tympani and incisions into the walls of the auditory canal without the patient's feeling it. Invariably, he stated, when cocaine cataphoresis was used, the sensibility was markedly reduced.

In the ear, cocaine anæsthesia is valuable only for operations, not for quieting pain from inflammation.

 NOVEL MEANS OF DIAGNOSIS OF PERFORATION OF THE MEMBRANA TYMPANI.

DR. E. PINS, of Vienna, has recently suggested two novel means of detecting small perforations in the membrana tympani (*Wiener med. Presse*, December 30, 1888). In cases where inspection and inflation, the ordinary methods of detecting a perforation in the drum-membrane, fail, it is suggested to fit into the auditory meatus a small whistle, which will give forth its note when air is forced into the Eustachian tube, if there be ever so small a perforation in the membrana. The kind of whistle recommended is such as is found in dolls and other toys. These give their sound upon the lightest entrance of air. There is, however, a paradox to be overcome, viz., the fact that a strong blast of air, with a short route, will not produce a sound in the

whistle. It is, therefore, necessary to connect it with the auditory meatus by means of a piece of rubber tubing 20 to 25 cm. long. Slight inflation of the middle ear will then bring forth the sound of the small diagnostic instrument.

The second method consists in filling lightly the auditory canal with a powder, like boric acid, magnesia usta, lycopodium, etc., after the ear has been thoroughly dried by means of absorbent cotton. If a perforation exists in the membrana tympani, inflation by Politzer's or Valsalva's method, or by the catheter, will cause a small cloud of dust to come from the external auditory meatus. By either of these methods a perforation may be demonstrated to a number of bystanders, as in a class or clinic.

PATHOLOGICAL CONDITIONS IN CASES OF PERFORATION OF THE MEMBRANA FLACCIDA.

At a recent meeting of German Naturalists and Physicians, September 18, 1888, DR. A. HARTMANN, of Berlin presented some specimens of the changes in the drum-cavity which accompany perforation of the membrana flaccida (*Archiv für Ohrenheilkunde*, vol. 27, Feb. 1889). Three of the subjects had died of abscess of the brain, and a fourth had perished from thrombosis of the sinuses. In a fifth case, the patient had suffered during life with uncomplicated chronic purulent otorrhœa, with an anterior inferior perforation in the membrana tympani (m. vibrans), and a cicatrix in the membrana flaccida.

In the tympanic cavity these changes were noted: In three instances the attic (upper drum-cavity) was found shut off from the atrium (lower part of drum-cavity) by membranes passing from the neck of the hammer forward and backward between this bonelet and the inner and outer wall of the tympanic cavity. Membranes were also found stretched from the tendon of the tensor tympani forward as far as the upper part of the tympanic opening of the Eustachian tube, and backward to the entrance of the mastoid cells. In one case the separation by this means was complete; in two cases a small opening existed in front of the tendon of the tensor tympani, between the anterior part of the attic cavity and the anterior part of the lower tympanic cavity. There were besides in three cases synechial formations between the membrana tympani and the inner wall of the drum-cavity.

When such conditions prevail, the communication between the Eustachian tube and the perforation in the membrana flaccida is cut off. In such cases a thorough removal of inspissated secretion and impacted matter can be obtained only by using some form of the tympanic syringe.

In the fourth case, synechiæ existed between the hammer, the incus, and the inner wall of the drum-cavity, by which the posterior part of the attic cavity was shut off from the inferior hinder portion of the lower drum-cavity. In the fifth case, cicatricial bands connected the hammer and incus with the outer wall of the attic cavity. The opening in this partition was filled with a plug of exudation. The therapeutic conclusion from these conditions is, that when the membrana tympani and the auditory ossicles are removed, these pathological bands between the membrana tympani and the ossicles on one side, and the walls of the drum-cavity on the other, must be thoroughly cut through, in order to facilitate removal.

METASTATIC PROCESSES EMANATING FROM OTITIS MEDIA.

DR. SIGISMUND SZENES, of Buda-Pesth, has reviewed the literature of this subject, and gives his own observations in an interesting and valuable article in a recent number of the *Deutsches Archiv für klinische Medizin* (Dec. 24, 1888).

"Although otitis media, in having its seat very near the brain, can readily pass into the latter, it is not impossible for the purulent secretion from the ear to pass by the lymphatics and bloodvessels to other organs as important as the brain, and there set up a process similar to that in the ear, which event can be warded off only by a timely recognition and treatment of the original aural disease."

The writer, after reviewing the cases of embolism from aural disease in organs other than the brain, gives three cases in his own experience. In one there were embolic abscesses in the lungs, kidneys, liver, and spleen; in a second case, with acute purulent otitis in both ears, there developed a cold abscess under the left clavicle. This case recovered entirely. In a third case, an acute otitis media was followed by a periostitis about the previously healthy molar tooth on the same side, after the ear-symptoms had disappeared. Metastatic processes from ear disease have been recorded as occurring in the following organs: the lungs, the pericardium, the joints, the liver, the pleura, the periosteum, the bones, the omentum, the bladder, the various glands, the kidneys, the spleen, and in the brain. Several organs may be attacked at the same time, and there may ensue a general pyæmia.

Treatment.—The treatment must be directed to both the primary and the secondary disease. The ear must receive energetic treatment. "As long as a suppuration in the ear continues, it is impossible to say how, when, or where it will end, nor to what it will lead." (Wilde.) Antiseptic measures are to be tried first, and if they fail, then astringents may be tried. If a metastatic abscess forms, it must be opened if it can be reached easily and safely. In the inflammatory stage we must depend upon antiphlogistics and rest in bed.

When an otitis occurs, therefore, we must bear in mind it ought to be treated from prophylactic motives, if from no other. For so long as it continues the patient is threatened with severe evils from metastasis.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF
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VAPOR OF STEAM AND SULPHUR IN DIPHTHERIA.

T. WYLD PAIRMAN, of Auckland, N. Z., highly extols (*Edinburgh Med. Journ.*, February, 1889) continuous inhalations of steam under a tented bed, improvised by placing a sheet over an opened umbrella fastened to the head of the bed, and burning a teaspoonful of sulphur in the apartment every hour.

ENCYSTED ABSCESS OF THE TONSIL.

GAREL (*Annales des mal. de l'oreille*, etc., January, 1889) reports three cases. According to his researches, the abscesses occasionally subside spontaneously, but are much more frequently recurrent, and remain encysted for several months, or even for years. He is of the opinion that the discharge of the original abscess takes place by a circuitous route, and that the hypertrophied tissues through which it passes prevent complete effacement of the walls of the abscess; the opening cicatrizing prematurely, whether it had been spontaneous or artificial.

Puncture with the incandescent caustic point, with counter-puncture if necessary, and topical irritant applications to the interior of the sac when large, appear to be the most effective treatment.

ANGEIOMA OF THE LARYNX; SEVERE HEMORRHAGE AFTER OPERATION.

FERRERI (*Lo Sperimentale*, December, 1888) reports a case of angioma the size of a hazelnut, on the inferior portion of the left vocal band. It was crushed with forceps. Alarming hemorrhage took place at night, with difficulty controlled by applications of ferric chloride. Despite a tracheotomy, violent hemorrhage took place as the operation was finished, and although the parts were tamponed successfully, death ensued within forty-eight hours by infectious pneumonitis.

LARYNGEAL TUBERCULOSIS.

DR. A. SOKOLOWSKI reports (*Wien. klin. Woch.*) six instances of spontaneous cicatrization without topical treatment, three instances of cicatrization under pencillings with lactic acid, and one under six weeks pencillings with silver nitrate. The cure had been maintained thus far one year in two, and four years in the third of the series treated with lactic acid; and three years in the case treated with silver nitrate. In a series of 50 cases treated without topical interference, improvement took place in 8, only 16 per cent. In a series of 50 cases submitted to topical treatment, improvement took place in 40, or 80 per cent. The improvement consisted in complete relief to hoarseness and dysphagia in 9 cases; decrease in infiltration and cicatrization of ulcerations in 31.

LARYNGEAL CARCINOMA, ITS DIAGNOSIS AND TREATMENT.

In an elaborate essay ("Der Kehlkopfkrebs, seine Diagnose, und Behandlung," *Deutsche med. Woch.*, Jan. 3, 10, 17, 24, 31, and Feb. 7, 1889) illustrated, with some exquisite reproductions from microscopic sections, DR. B. FRÄNKEL, of Berlin, alludes first to the different forms in which carcinoma begins in the larynx.

The most frequent form he has seen is that of a tumor on a vocal band; polypoid carcinoma. At first there is no other symptom than hoarseness. This is not due to any immobility of the vocal band, but rather to the mechanical interference with the tonal qualities of the vocal membrane. It is not peculiar to carcinoma. The majority of laryngeal carcinomas occur in

men beyond forty years of age. Hence age and sex may be, to some extent, aids in the diagnosis, but are not positive indicators. This polypoid carcinoma of the vocal band presents in the commencement as a flat, broadly sessile elevation. It penetrates toward the interior of the tissues, instead of growing more into free space, as is the case with benign growths. The epithelium becomes destroyed, and the surface then appears either flat or rugose, and grayish or whitish. This form is usually the keratoid or horny carcinoma. In preparing excised fragments for microscopic examination, great care must be taken to make the sections perpendicular to the surface, so as to avoid mistakes in their interpretation. This important point is discussed in detail. In another class of cases the carcinoma of the vocal band is diffuse; and has the disposition to extend in superficies instead of forming a circumscribed tumor. At first it can hardly be distinguished from any other thickening of the mucous membrane. Small hemispherical nodules from the size of pin-heads to that of linseeds project from the diffuse tumefaction; sometimes one only, sometimes several. Some portions appear lardaceous; others hyperæmic. Almost invariably one band only is affected. Growth is slow. It may take a month for the thickening to exceed a few millimetres. There is less tendency to extension in depth than on the surface, until, finally, the entire vocal band becomes involved. Even then the band maintains its general contour and its motility. In three cases in which excised fragments were examined, the inspection revealed simple carcinoma (Waldeyer). In keratoid carcinoma the cornification is the prominent feature; in simple carcinoma, it is the papillary formation. The impaired motility of the band to which Semon has recently called attention, has been noted by Fränkel only when the growth occupied the posterior portion of the vocal band where the vocal process penetrates the soft parts. In such cases median position of the band soon took place. In one instance only has he seen this median position in a carcinoma commencing in the anterior portion. In this case the bilateral median position of the vocal bands was found *post-mortem* to be due to imbedding of the two recurrent nerves in symmetrically enlarged glands, the size of small hazelnuts, which had not been perceptible during life. The diagnosis of this form is made either by watching its progress and its failure to respond to internal medication, which consumes considerable time; or by removing a fragment and submitting it to microscopic examination. Should this investigation be negative, similar fragments should be submitted to examination from time to time.

Polypoid and diffuse carcinoma occur in the ventricular bands and ary-epiglottic folds, but the chalky-looking masses do not present. The tumefaction is red, sometimes redder than the healthy tissues surrounding. The polypoid form is more distinctly dendritic than on the vocal band. The extension, though slow, is rather more rapid than where there is pavement epithelium.

Carcinoma of the posterior wall of the larynx soon causes impaired motility of the vocal bands, and sometimes causes painful dysphagia at the commencement. Early examination of excised fragments is necessary because involvement of this region soonest renders unilateral excision an insufficient radical procedure.

Carcinoma of the ventricle causes at first no other change than to force the

ventricular band and the aryepiglottic fold toward the free space of the larynx; and it remains for a long time covered and concealed by those structures. It soon produces mechanical impairment in the outward excursion of the vocal bands. Finally, the ventricular band is forced so far forward in the interior of the larynx as not only to cover the vocal band but also a portion of the opposite half of the larynx. An instance of ventricular carcinoma is illustrated, the microscopic examination of which revealed a characteristic glandular carcinoma. It was seated in a rather thick layer of dense connective tissue and thus formed an adenoid fibrous carcinoma. Fränkel thinks that it is quite probable that ventricular carcinoma frequently begins in the numerous glands in this situation. Its diagnosis from inspection is very difficult; but prolonged observation eventually shows that the ventricular band and aryepiglottic fold are not swollen, but are pushed outward; and a point is noted as the apex of the deformity, from which the parts gradually slope into the normal tissue surrounding. Laryngoscopy offers no conclusion as to the nature of the tumor. Almost the only other tumor occurring in the ventricle is the gumma. The differential diagnosis of gumma is usually practicable by its absorption under antisyphilitic treatment.

Carcinoma of the vocal band has a great disposition to extend along the contiguous squamous epithelium, and it reaches the opposite side either along the anterior commissure, or along the posterior wall. In this way the circular forms are produced, involving both vocal bands and, with the exception of the posterior walls, usually only limited portions of the larynx, and chiefly in the subglottic region. If it be polypoid carcinoma, the vocal bands look as though bestrewn with nodular outgrowths. The carcinoma extends far more deeply than is apparent on inspection. [The compiler might mention an instance in which a carcinomatous growth the size of a small bean as viewed laryngoscopically, turned out on extirpation to be but the intra-laryngeal portion of a growth the size of a large hazelnut, extending encapsulated into the pyriform sinus.] The glottis often becomes so occluded as to produce laryngeal stridor, so that tracheotomy becomes necessary in many instances to avert suffocation. Diffuse carcinoma does not produce stridor, even though both vocal bands are implicated their entire length. When the circular carcinoma extends to the ventricular bands, these structures become covered with red nodules the size of small peas. The ventricular bands swell and cover the vocal bands so that mere stripes remain visible.

Carcinomas extending to the ventricular bands, the aryepiglottic folds, and the epiglottis, usually become dendritic or cauliflower-like in their further development. This is the form most frequently described and depicted.

Laryngeal carcinoma takes sudden stages of recrudescence after intermittent intervals of apparent quiescence; and gradually produces stridor, which may proceed to asphyxia. Glandular swelling is less frequent, and is later in occurrence than in carcinoma of the majority of other organs. It is sometimes absent, even in cases that have been fatal. This fact is of great importance in reference to prognosis and treatment. Minute glandular swellings of the neck are difficult to feel in the living subject. On the other hand, cases occur in which, at a certain period, the glandular swelling in the throat is the most prominent symptom complained of, and the only symptom of the disease in the absence of laryngoscopic inspection. An instance in point

is noted in which a keratoid carcinoma of the vocal and ventricular band barely exceeded the bulk of a bean. Thus it is difficult to estimate the value of tumefaction of lymphatic glands in the diagnosis of laryngeal carcinoma.

The carcinomatous tissues have a tendency to undergo disintegration at a certain stage. The process is ulcerous at first, and gangrenous later. This period is dependent upon special conditions. Sometimes extensive and deep-seated infiltration of the vocal and ventricular band takes place, even to the bulk of a considerable tumor, without a trace of ulceration. In other cases carcinomas apparently small and superficial undergo more or less ulcerative disintegration on the surface. Nevertheless, these carcinomas may have penetrated deeply into the tissues. Ulceration is an indication that such extension has already taken place. Despite the friction to which the parts are subjected in performance of function, ulcerous destruction is a late manifestation, and does not take place until the carcinoma has existed for a year at least. With the appearance of ulceration the period of tumor growth closes—the most important period in a therapeutic point of view. The ulcerations are usually recognized very readily in the laryngoscopic image. They are surrounded by tumid masses sometimes smooth, sometimes with dense borders, sometimes covered with outgrowths similar to papillomas or granulation nodules. When the ulcerative process becomes more extensive, it may present an appearance similar to the ulceration in tuberculosis or in syphilis. Rapid disintegration gives rise to a peculiar fetor which sometimes proclaims the diagnosis before laryngoscopic inspection has been made. When doubt exists as to the character of an ulceration, fragments of the tissues at the margins should be repeatedly excised for microscopic inspection, although in many instances there may be no characteristic evidences detected. Sometimes the diagnosis can be made by microscopic inspection of the sputum. Cicatrization has been known to take place in a few instances, two cases being cited from the practice of von Bergmann and of Krönlein respectively.

The duration of the ulcerative stage of carcinoma varies, but usually extends over a number of months. Then the third period begins. This is characterized by deep-seated disintegrations, especially necrosis of the cartilages, gangrene of the superficies, and extensions into neighboring organs. The penetrating carcinoma attacks the connective tissue, the elastic membrane, the muscles, and the glands. As to penetration of the cartilage, while Fränkel has not yet investigated Schottelius's observation that carcinoma penetrates into medullary and vascular cartilage only, he can confirm the observation that it readily attacks ossified cartilage, especially the thyroid and the plate of the cricoid, as well as the lower portions of the arytenoids. It grows uninterruptedly into reticulated cartilage, such as the vocal process, but usually surrounds hyaline cartilage. When carcinoma penetrates a cartilage, the portion attacked undergoes disintegration, and the intact portion becomes detached from its connections and crumbled. Then it is often coughed out. The healthy cartilage in the neighborhood of the extending carcinoma undergoes calcification. Additional necrosis of cartilage is produced by perichondritis. Purulent inflammation of the perichondrium is a frequent complication of laryngeal carcinoma, and the destructive process extends far more deeply than is indicated by the superficial evidence. Extensive implication is found in marked contrast to the comparatively small, crater-like ulcer on the surface.

Apart from evidences of carcinomatous infiltration in the vicinity, there is nothing characteristic in the laryngoscopic image of perichondritis at its commencement, yet it is usually recognizable by the coexistence of the tumor, sometimes ulcerated, which has produced it. Its course, too, shows that it is produced by a slowly progressive process. Fränkel has found its recognition difficult in one class of cases only, in which carcinoma on the anterior pharyngeal wall produced perichondritis of the plate of the cricoid, or of the arytenoid, or of both together. The specific fetor usually indicates the carcinomatous condition in doubtful cases, and careful examination will usually detect the carcinomatous infiltration in its vicinity, or the tumor, as may be; and, after a time, microscopic inspection of expectorated or excised particles and of secretions may confirm the diagnosis. Perichondritis, especially when complicated with œdematous tumefaction, may produce sudden asphyxia, even when there has been no precedent stenosis. Should symptoms of stenosis have been present, they will be rendered more or less acute by the purulent perichondritis.

Special mention must be made of those cases in which carcinoma develops in the thyroid cartilage, and can be felt from the outside. This occurs in two ways. The thyroid cartilage may become much thicker, and feel like an almond shell, or like a crab shell (Isambert). The thyroid cartilage may become penetrated. Then, between the skin and cartilage, soft, tumid masses are felt, which move with the larynx in glutton. Superficial examination may lead to mistaking them for abscesses. If they are incised, the fact of tumor becomes evident. Finally, the carcinoma may penetrate the skin and produce laryngeal fistula. Death may occur by suffocation; or, and more frequently, by aspiratory or by glutatory pneumonitis, the glutatory pneumonitis being more frequent of the two; by exhaustion; and by complications, such as descent of pus, hemorrhage, suffocation by compression, or by filling up the air-passage below the end of the canula, etc.

Treatment.—As carcinoma is a local malady, in the beginning it should be treated *in situ* by removal, so long as it remains a local lesion. The earlier and the more thorough this removal, the less the chance of recurrence. Recent experience has much improved the prognosis of active therapeutic measures. The method of eradication will depend on the individualities of the case. Intra-laryngeal eradication is practicable in some instances. Fränkel here refers to his own case, in which, between 1881 and 1884, he extirpated a carcinoma intra-laryngeally after four consecutive recurrences; the patient, a man seventy-seven years of age, having remained ever since in perfect health, and able to speak in a loud voice. He mentions five other instances in which he has attempted intra laryngeal eradication. One of them he has not heard of since. One man, sixty eight years of age, has remained free from recurrence for two years; one has remained well permanently; one has remained well up to date, six months; and in one the attempt failed, and the affected vocal band had to be removed from the exterior after preliminary laryngo-fissure. In this instance, microscopic examination of the extirpated vocal band showed that the greater portion of the tumor had been removed intra-laryngeally; but that some papillæ had penetrated inward as far as the musculature.

Endo-laryngeal efforts are justifiable only when laryngoscopic inspection indicates the probability that the tumor can be removed *in toto*. Successful

endo-laryngeal procedure is practicable in the early forms of small polypoid carcinomas which are thoroughly accessible, and more especially in cases of diffuse carcinoma. The proper instruments are the cutting forceps and the snare. The electro-cautery is hardly worthy of consideration, as it is not calculated to destroy tissues very deeply. Furthermore, Fränkel believes that he has seen undestroyed carcinomatous masses excited to more rapid growth under the influence of the hyperæmia attending detachment of the eschar.

In all instances in which endo-laryngeal methods fail, or are, from the nature of the case, impracticable, partial extirpation of the larynx must be practised pretty early. Fränkel seems to recognize limited extirpation of soft tissues alone, as partial extirpation of the larynx. Literally, this view is correct. Chirurgically, simple excision or eradication of the growth and surrounding tissue, without sacrifice of skeletal structure, cannot be regarded as partial extirpation of the larynx.

Antiseptic precautions, the use of the tampon-canula, or operations on the hanging head, have so diminished the laryngo-fissure that it now becomes an operation that is not to be regarded as dangerous. Its dangers in carcinoma are due to lateness in operation; the prognosis being dependent upon the age of the carcinoma. The instances of death and of recurrences have taken place in cases of already ulcerated carcinoma, or tumors which have invaded the cartilages, or the vocal and ventricular bands, and have acquired considerable extension in superficial surface. The definitely cured cases have been operated upon almost exclusively in a more or less early stage. It is better to submit the patient to laryngo-fissure for the removal of a tumor which cannot be eradicated endo-laryngeally, even though it should prove to be a gumma, a sarcoma, or a tuberculous tumor instead of a carcinoma, than to risk the patient's life by waiting too long. The error which injures the patient is the one which prevents the early extirpation of the carcinoma. Uncertainty in diagnosis should never lead to too long a postponement of the operation. It is practicable to make the diagnosis during the operation. The larynx being divided, a small portion of the tumor can be excised, and a section be made with the double knife, and submitted to microscopic examination while further operative procedures are suspended for the few minutes necessary.

In removing carcinoma, the incisions should be made into sound tissues, distant at least one centimetre, when practicable, from the macro-copic limits of the growth. Fränkel has found cancer nests microscopically more than a centimetre distant from the apparent macroscopic limits of ulcerative carcinoma of a vocal band. The frequency of recurrence in cases of some standing, is due to this invisible extension. It is only in the early stages that a reasonable probability of limitation to the macroscopic growth can be entertained. Fränkel urges that, whenever possible, the thyroid and cricoid cartilages, and the mucous membrane of the entrance of the larynx should be retained. The retention of the cartilages secures a passage for respiration; and the retention of the filaments of the superior laryngeal nerve in the mucous membrane of the laryngeal entrance guards against pneumonitis from gluttony. Therefore, these parts should be retained if they have not been invaded by carcinoma. It suffices, too, to remove the vocal band only, when the carcinoma has not extended beyond. While everything must be removed that may be dis-

eased, care should be taken to operate so early that too much need not be removed. Fränkel calls attention to the fold which is produced when one vocal band has been extirpated, and to the irregularities upon its surface, which may readily be mistaken for recurrence of carcinoma.

While total extirpation is dangerous, and comparatively few patients are actually saved by it, there is every reason to believe that earlier operation, and improvements in its surgical technics, will gradually render the procedure more and more successful. In this connection Frankel advises that the decision be left to the patient after all the contingencies have been faithfully communicated. [To this the compiler does not accede. He believes that the physician must accept the full responsibility of the profession he practises, and that he should advise the patient which is the proper course. Patients apply to physicians for advice as well as for treatment, and they have a right to exact the advice. The physician is in better mental condition to estimate the prospects of recovery than the unfortunate patient can be, even when himself a physician as familiar with the phases of the subject as his medical adviser should be. If the circumstances are such as to justify reasonable doubts as to a successful result, the voice of the physician should be raised against the laryngectomy. If the prospects are decidedly favorable, then the operation should be advised; if prospectively favorable, it should at least be countenanced. Should the patient decide to run the risk, despite advice to the contrary, then the physician has no further right to object; and his duty requires that he should take every precaution to reduce that risk to its smallest dimensions, with as much circumspection as though it were taken at his own solicitation against the predilection of his patient.] In those cases in which unilateral exsection is no longer successfully practicable, and in which total extirpation cannot be performed, Fränkel recognizes the indication to remove as much of the carcinoma as is possible. For this purpose laryngo-fi-sure is to be made, and the parts to be exsected, scraped out, or burned away, as may best fulfil the indication. He believes it to be possible at times to fulfil this indication by way of the natural passages, if a tracheal canula has been introduced.

When radical operation is impracticable, palliative treatment alone remains. Practically nothing is to be gained by internal remedies and topical medication.

Tracheotomy becomes necessary to avert death by asphyxia. It should be performed as soon as stridor becomes habitual on exercise and the like. This not only prevents death by suffocation from sudden increase in stenosis, but it prevents cardiac debility from long-continued impediment in due oxygenation of the blood. The fatality following tracheotomy may be attributed in part to the fact that it had been postponed too long. Frankel would have it performed when the evidences of stenosis first become permanent, not when they have been present for a few hours only. Low tracheotomy should be performed because laryngeal carcinoma has the tendency to extend downward.

The remaining palliative treatment consists in careful supervision of the nourishment. The patient should be accustomed to take liquid and semi-solid food as soon as there is any stenosis of the gullet; and eventually to submit to the œsophageal catheter, and to artificial nourishment when it becomes necessary. Topical applications of menthol and of cocaine will obtund pain

in swallowing. Fetor may be controlled by deodorizing inhalations and insufflations. Narcotics play a great rôle in rendering life endurable. The tenure of life is so short that extensive use of morphia can be made without hesitation, on the score of inducing morphinismus.

The following conclusions close this timely, thoughtful, and instructive essay:

"Laryngeal carcinoma can almost exceptionally be safely recognized at its commencement by laryngoscopic inspection, and by microscopic examination of fragments removed for the purpose. The eradication of early forms by endo-laryngeal procedures, or by partial extirpation of the larynx, justifies the inference that the majority of cases are susceptible of permanent cure."

LARYNGECTOMY; STATISTICS.

DR. W. H. VON KRAJEWSKI, of Warsaw, makes (*Deutsch. med. Wochen.*, January 24, 1889) the severest detailed criticism of Mackenzie's statistics that has yet been published. He shows that forty-four of Mackenzie's cases must be reduced to twenty-two, on the score of reduplication, owing chiefly to their having been accredited from reports published in some instances at considerable intervals, and in others by being accredited to both operator and reporter.

VOICE AFTER LARYNGECTOMY.

In our December issue we noted a communication by DR. HANS SCHMID concerning a patient who had undergone laryngectomy, and who was able to speak aloud without the aid of an artificial phonal apparatus. This case has been carefully studied by Drs. STRUEBING and LANDOIS (*Deut. med. Woch.*, Dec. 27, 1888). The mechanism by which phonation is produced in this instance is explained as follows: A space has been left beneath the base of the tongue which can be dilated and compressed by muscular exertion. This space acts like the bag of a bellows in place of the lungs, and drives the air-current necessary for speech. The patient throws the base of his tongue forcibly against the posterior wall of the pharynx, leaving a narrow slit, the walls of which act as the phonal reeds. This adventitious glottis, so to speak, seems to be formed chiefly by the styloglossus and the muscles of the pharyngeal wall; while the compression and extrusion of air are effected by the stylohyoids and the cerato and chondro-pharyngei.

WOUND OF THE LARYNX.

CAZAL (*Bull. Méd.*, April 8, 1888; *Annales des mal. de l'or.*, etc., Jan. 1889) reports a case of minute wound from a fragment of glass beneath the vocal bands, and which produced death by reflex spasm. Unfortunately, a proposed tracheotomy had been given up on account of apparent permanent subsidence of the spasm. This but adds additional confirmation to the views long held by the compiler, that precautional tracheotomy is the only certain avenue of safety for a patient subject to spasm of the larynx, no matter what the cause, as long as that cause has not been removed. Better hundreds of scars from tracheotomy wounds among those who would escape without it, than a single life lost by neglect to perform the operation.

DENDRITIC HYPERTROPHIES OF THE TURBINATED BODIES.

MR. W. SPENCER WATSON (*Med. Press and Circular*, Dec. 19, 1888) reports and illustrates three instances of voluminous hypertrophy of the posterior segments of the inferior turbinated bone, very large, and so dendritic or fimbriated as to resemble papilloma, and one of them associated with a cyst. They were removed by slicing off the implicated portion of the turbinated bone with a ring-knife passed through the nasal passage and then hitched over the nose with the assistance of a forefinger passed behind the palate. Watson alludes to the fact that papillæ are not known to exist on the mucous membrane of the turbinated bone; but Seiss, of Philadelphia, has recently described (*AMERICAN JOURNAL OF THE MEDICAL SCIENCES*, February 1, 1889) the formation of hypertrophic papillæ as very frequent in cases of hypertrophic rhinitis of long standing, multiple papillomata of very minute size springing from the surface of the turbinated tissue. Similar hypertrophies have been well described and figured by Woakes.

OBSTETRICS.

UNDER THE CHARGE OF

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THE DURATION OF LEGITIMATE PREGNANCY.

At a recent discussion on this question in the Berlin Obstetrical Society, OLSHAUSEN (*Centralblatt für Gynäkologie*, No. 1, 1889) stated his belief as follows: "When ability to breathe is taken as a criterion of life, this phenomenon may occur at 160 to 165 days of fetal life. Viability is not present before 195 days. The possible duration of pregnancy must not be limited, as ordinarily done, to 300 days, but must be extended to 320 to 325 days—at least to 310 days. In the case of children born in widowhood, the period of legal pregnancy should be 320 days. Illegitimate pregnancy should be limited to 300 days as a possible duration."

A FATAL CASE OF THE VOMITING OF PREGNANCY..

KINGMAN (*Boston Medical and Surgical Journal*, Feb. 7, 1889) reports a fatal case of the vomiting of pregnancy. The conditions present were a maltreated and sensitive stomach; a rheumatic diathesis; a strongly compressed waist; a uterus strongly anteфлекed, cervix eroded and flattened against the floor of the pelvis; the os and ovaries extremely sensitive. Applications to the cervix gave temporary relief; straightening and lifting the uterus were temporarily efficient. The os was finally stretched and a four months' macerated fetus was born.

The patient died suddenly, apparently from thrombosis, as the endocardium had been roughened by rheumatism. The patient was a primipara, previously in good health.

STERILIZATION OF THE FEMALE GENITAL TRACT.

STEFFECK (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band 15, Heft 2) has conducted an extensive series of experiments upon the practical disinfection of the genital tract. For the purposes of the obstetrician, the vagina and cervix only need sterilization, as it has been shown that bacteria in normal puerperal cases do not exist in the uterine cavity. Such sterilization is best effected by inserting two fingers into the vagina, and thoroughly douching the vagina and cervix with one quart of bichloride of mercury solution (1 to 3000), or carbolic acid solution three per cent.; to maintain a sterile condition, a similar vaginal douche must be given every two hours. During labor, and especially during protracted and complicated labor, the utility of sterilization of the genital tract to prevent infection is obvious.

For gynecological purposes, before operation, it is necessary to remove cervical secretions by cotton dipped in bichloride solution, wash out the uterus with carbolic acid solution three per cent., and tampon the cervix with sterilized or iodoform gauze. Such sterilization suffices for four hours, after which bacteria may multiply. Steffeck found creolin inferior to carbolic acid and mercury as a disinfectant. Eight varieties of bacteria were found in the secretions of cervix and vagina, all of which colonized at the body temperature after twenty-four hours. No effort was made to determine which of them were pathogenic; it is safest to destroy all alike when infection is feared.

THE CONVERSION OF FACE AND OCCIPITO-POSTERIOR POSITIONS INTO OCCIPITO ANTERIOR POSITIONS BY MANIPULATION.

LOVIOT (*Bulletins de la Société Obstétricale de Paris*, Nos. 10 and 11, 1888), reports a case of face presentation in which an attempt to correct the position of the head by raising the chin *per vaginam* and depressing the occiput by abdominal pressure failed; the hand was then introduced into the uterus, the membranes ruptured, and the occiput brought down. As a tendency to posterior rotation of the occiput persisted, the occiput was rotated sufficiently to permit the application of the forceps, and delivery effected with the occiput in its normal position.

Two cases of posterior rotation of the occiput are also reported, in which anterior rotation was effected by introducing the hand into the vagina, four fingers placed upon the head posteriorly, the thumb anteriorly, the head turning during a pain without great difficulty. In a third case the occiput showed a tendency to rotate posteriorly after it had been dislodged; the forceps was immediately applied and delivery effected. In a fourth case the hand was not removed after the occiput had been turned, but the left blade of the forceps was passed at once, guided by the right hand; the head was prevented from rotating by this blade, and the introduction of the right blade was easy; labor was terminated without difficulty.

Loviot employed chloroform when an anæsthetic was required; he considers manipulation, with antiseptic precautions, and the subsequent application of forceps, the most effective method of correcting abnormal positions of the head.

CAUSES PRODUCING BREECH PRESENTATIONS.

TÖRNGREN, of Helsingfor (*Archives de Tocologie*, No. 12, 1888), from the study of 261 pelvic presentations, concludes that breech presentation without

the prolapse of the limbs occurs when the centre of the uterus occupies the centre of the abdomen and pelvis, and the foetal breech is at the upper border of the pelvic inlet; also, when the uterus is oblique in the pelvis, the fundus being on the same side with the foetal back.

The feet present when the uterus is in the median line, the breech being just above the superior strait, or when the uterus is oblique, the fundus being on the same side with the smaller foetal parts (hands and feet). Presentation of the knees occurs when the long axis of the foetus does not coincide with the axis of the pelvis, or when the breech remains above the dynamic pelvis, the feet resting upon the pelvic margin at the superior strait.

PROLAPSE OF THE PLACENTA, WITHOUT PLACENTA PRÆVIA.

MÜNCHMEYER (*Archiv für Gynäkologie*, Band 33, Heft 3) reports two cases of prolapse of a normally attached placenta in which the placenta was born before the child. The first was a multipara with a flat, rachitic pelvis; the foetus was in head presentation. Labor proceeded without hemorrhage until the os was dilated; the head failed to descend; the placenta was not perceived on examination. The placenta suddenly presented, after several strong pains, in the vagina by its foetal surface. The patient was immediately anæsthetized, the vagina disinfected, and the hand introduced and the placenta expelled. The membranes had ruptured at the border of the placenta, they were otherwise intact. Neither fresh nor previously coagulated blood was found on the placenta. The cord was cut, and it was found that the feet of the foetus lay beside the head. Extraction by the feet was attempted, but the size of the foetus and the impaction of the arms rendered it impossible, and embryotomy and craniotomy and delivery of the head with the cranioclast were performed. The mother suffered from parametritis with abscess, but recovered.

The second case was twin pregnancy in a multipara; after a prolonged first stage a female child was born living; there was no hemorrhage nor did examination reveal a presentation or prolapse of the placenta. The cord was short (between twelve and thirteen inches long) but was not ruptured. Examination revealed a placenta presenting by its foetal aspect which belonged to the second twin. The expulsion of the child (stillborn) and placenta followed; the placenta of the first twin was then removed. The two placentæ had been slightly adherent at the chorionic surface; both were *placentæ marginatæ*. The mother recovered without complications.

Münchmeyer has no explanation for the prolapse of the placenta in these cases; he mentions the following diagnostic points between prolapse of the placenta in placenta prævia and prolapse when the placenta is not prævia. Prolapse of the placenta when not prævia gives no sign or symptom for diagnosis except sudden failure of foetal heart-sounds during labor, placenta prævia and prolapse are diagnosed by hemorrhage; in placenta prævia the foetus often perishes during pregnancy, in prolapse when not placenta prævia foetal death occurs at the moment of birth; when a normally implanted placenta prolapses it presents by the foetal surface, placenta prævia presents by the maternal surface; the danger for the mother from septic infection is equally great; from hemorrhage, great in placenta prævia only; the prognosis for the child is equally grave in both cases.

ANTERO-POSTERIOR COMPRESSION FORCEPS.

SLOAN (*British Medical Journal*, February 2, 1889) has devised a forceps for use in flat pelves, in which the head commonly presents transversely. The forceps is fifteen inches long, with a pelvic angle of thirty degrees. One blade is intended to grasp the head from directly behind the symphysis pubis, the other passes posteriorly, the promontory of the sacrum fitting into its fenestra: the fenestræ are large, the rims wide, and the shanks strong enough to admit considerable compression of the head.

The theory of the forceps consists in compressing the head, reducing the biparietal diameter, and dislodging the anterior parietal bone which ordinarily hinders descent by over-riding the symphysis pubis. The head passes the promontory without dangerous compression, and rotates into the antero-posterior diameter of the outlet. Sloan has had as yet limited opportunity to apply his forceps; the results in his cases indicated that the head may be delivered without excessive compression, and craniotomy avoided in some cases of flat pelvis.

DIFFERENT METHODS OF PERFORMING CRANIOTOMY.

DONALD (*Lancet*, January 12, 1889), in a paper before the London Obstetrical Society, believed craniotomy indicated when axis-traction with forceps failed; when the head could not be extricated after version; when the child was dead; when the mother's condition forbade Cæsarean section; in fetal deformities. When axis-traction forceps fail to deliver the head, perforation may be done without removing the forceps, and the head compressed and extracted by the forceps. In highly contracted pelves podalic version, extraction of the body, perforation through the roof of the mouth, cephalotripsy of the head, and extraction by the cephalotribe or by traction on the lower jaw and body, with suprapubic pressure, may be performed. The advantages of this method were stated as firm fixation of the head and thorough crushing of the base; the head may be easily turned by the cephalotribe in any pelvic diameter; the head often collapses by traction on the body and jaw and suprapubic pressure on the head.

GALABIN preferred the cephalotribe to other extractors after craniotomy; he had found craniotomy on the after-coming head a difficult procedure.

HERMAN rarely performed version but crushed the head with the cephalotribe and rotated it in the greatest pelvic diameter; when the neck and shoulders did not descend he rotated them by external pressure.

ROUTH performed decapitation close to the foramen magnum by heavy scissors bent at an obtuse angle; the handles were long, giving great power. The head was then steadied from above, and perforation or cephalotripsy performed.

GRIFFITH had perforated the head, seized it with a powerful cranioclast, and rotated it slowly, causing it to collapse by pressure against the pelvic walls; as no spiculæ of bone presented, no damage was done to the mother.

DONALD remarked that his percentage of craniotomies had been 1 in 700 labors; when the lower uterine segment was not greatly di-tended he performed version and perforation of the after-coming head.

CÆSAREAN SECTION FOR CARCINOMA UTERI.

BEAUCAMST (*Centralblatt für Gynäkologie*, No. 52, 1888) reports a case of twin pregnancy complicated by carcinoma of the cervix uteri treated by laparotomy. An elastic ligature was placed about the cervix; the uterus was incised and emptied, one twin having died and partly macerated; the fundus was then amputated, and the cervix was inverted and stitched through the vaginal walls. The patient recovered, and was subsequently operated on for the removal of the carcinoma.

This method of treating the stump was devised by Frank, who first stitched the edges of the stump together with silver sutures, leaving them long; they were drawn through the vagina, emerging at the vulva, and the cervix was thus inverted, closing the abdominal peritoneum and bringing the stump external to it.

TRIPLE PREGNANCY; SUDDEN DEATH IN LABOR; EXTRACTION OF THE CHILDREN.

PINARD (*Annales de Gynécologie*, January, 1889) reports a case of triple pregnancy in which a diagnosis of triplets was made before labor by abdominal palpation. Examination of the patient revealed no abnormality in the viscera. At labor the os dilated readily, and a head engaged: the patient was suddenly taken with severe dyspnoea, and died almost instantly. The midwife in attendance ruptured the membranes, and extracted the triplets in succession by grasping the feet; all were resuscitated and lived. The placenta remained adherent.

Post-mortem examination revealed an enormously enlarged liver; the stomach greatly distended by gas; the cardiac ventricles thinned and distended, the walls fatty, and obliterative endarteritis in the vessels supplying the ventricular muscle. Death resulted from sudden dilatation of the ventricles and failure of the heart's action. A detailed report of the condition of the uterus will be published subsequently.

Of practical interest in the case are the enormous size of the liver, which was engorged with blood, the microscope showing intense congestion, and the ease with which the midwife delivered the triplets after the mother's death. The latter suggests the recommendation of Rizzoli, that children can be delivered *per vaginam* in case of sudden death in labor, without Cæsaean section.

A CASE OF QUADRUPLE PREGNANCY.

STEFFECK (*Centralblatt für Gynäkologie*, No. 51, 1888) reports a case of quadruple pregnancy, birth occurring spontaneously at term. The children did not survive their birth; they were a boy and three girls. The mother made a good recovery. The case was supposed to be twin pregnancy from the size of the abdomen; no further diagnosis was possible before labor. The children were perfectly formed, and as large as at six months.

There were two twin placenta; the cords were marginal in their insertion. The membranes, with one placenta, were two amnions, a common chorion; the amnion divided the intra-membranous space into unequal halves. With the second placenta were two amnions and two chorions; decidua was not

present on the chorions, both ova had united before the reflexa was formed. The foetal surface of the placenta was divided into unequal halves; there were no anastomoses between the bloodvessels of the two ova. The placentæ were attached together, an imperfect partition existing between them. Twin pregnancy had occurred twice in the families of the parents.

EXTRA-UTERINE PREGNANCY.

TREUB (*Zeitschrift für Geburtshülfe*, Band 15, Heft 2) reports two cases of extra-uterine pregnancy treated by laparotomy. The first was diagnosed by the presence of an abdominal tumor, pain, slight fever, discharge of decidua, and an empty uterus: as pregnancy advanced the foetus could be outlined in the abdominal cavity. A few weeks before term laparotomy was performed. The placenta lay in the line of incision, and was partially cut through and partially perforated by the hand; the child was extracted and the placenta removed. Adhesions were ligated, and the edges of the foetal sac were stitched to the abdominal wall. The sac was tamponned with iodoform gauze. The patient rallied from the operation, and the sac lessened in size. Suppuration persisted in the sac wall, and the patient suffered from septicæmia. Other applications failing to arrest suppuration, the following powder was used freely in the cavity:

Sodii biborat.	.	.	.	.	.	.	.	50 parts.
Acid. salicyl. pur.	.	.	.	.	.	.	.	20 "
Iodoform	.	.	.	.	.	.	.	10 "

The patient gradually became afebrile, suppuration ceased and recovery ensued. The child also recovered.

A second case of tubal pregnancy, which became abdominal by the rupture of the tube, was allowed to go on undisturbed until the foetus died, and by its maceration the mother contracted septicæmia. Laparotomy was performed, but too late; the patient died soon after. The second case was allowed to go on in the hope that the placental circulation would become obliterated, thus removing the danger of hemorrhage; the delay was fatal.

EXTRA-UTERINE PREGNANCY, WITH FORMATION OF A LITHOPÆDION.

BREISKY (*Wiener klinische Wochenschrift*, No. 38, 1888) reports a case of tubal pregnancy which became abdominal by the bursting of the tube. As no great shock resulted, the patient was instructed to return for operation when foetal movements were no longer perceived. Eight years after the patient returned, the foetus having become a lithopædion, which was causing pain and irritation of the surrounding viscera. It was removed with difficulty by laparotomy; to release the foetus from its adhesions it was necessary to incise the abdominal walls laterally as well as in the median line. The mother recovered. Very little calcification had occurred; the organs of the foetal body were intact, and the microscope demonstrated the various tissues.

MATERNAL AND FŒTAL LEUCÆMIA.

SÄNGER (*Archiv für Gynäkologie*, Band 33, Heft 2) reports a case of leucæmia during pregnancy, characterized by splenic tumor, which became so

large as to necessitate the induction of labor; the maternal blood was very rich in leucocytes. But little blood was lost at labor; the child was living and healthy. The puerperal period was normal, the mother regained comfortable health, but the splenic tumor remained.

Sänger concludes from the study of his and similar cases that abortion should not be performed, but pregnancy allowed to go on until the child is viable, when labor should be induced. In leucæmia the placenta is expelled without severe hemorrhage; mothers and children recover. In pernicious anæmia the mothers rapidly fail and die after labor. Leucocytes do not pass from the maternal to the foetal blood.

Sänger also reports an interesting case of leucæmia in a foetus at term still-born, with extensive dropsy and disseminated lymphomata. The mother suffered from nephritis, dying after labor. From the study of this case he concludes that leucocytes do not pass from maternal to foetal blood, and that leucæmia is not communicated by either mother or child.

THE TREATMENT OF PUERPERAL SEPTICÆMIA BY CONSTANT DISINFECTION.

KURZ (*Wiener Klinik*, December, 1888) has obtained excellent results in treating puerperal septicæmia by constant irrigation with a warm solution of carbolic acid, from 1 to 3 per cent.; he commonly employs a 2 per cent. solution with alcohol.

The patient lies upon a convenient bedpan or douche pan, so arranged that fluid may be constantly discharged. An irrigator holding five gallons is placed about three feet above the patient's bed and filled with the solution, the fluid may be passed through Leiter's alcohol lamp to advantage, by which a constant temperature is maintained; a thermometer in the exit tube affords an accurate measurement of the heat of the solution.

Kurz has constructed an intrauterine catheter having but one curve, which he prefers; after a vaginal douche has been given this catheter is inserted in the uterus and the fluid allowed to flow. The douche is continued until the temperature becomes normal; the stream is shut off but the catheter is allowed to remain. When the temperature is subnormal or remains at normal and the pulse sinks the catheter is removed. A trace of carbolic acid in the urine is disregarded; when pronounced symptoms of carbolic intoxication are present the stream is shut off—this happens very rarely.

Eight cases of puerperal septicæmia are reported in detail, successfully treated by this method. Thirty deaths from douches of bichloride of mercury are recorded, and carbolic acid is preferred for intrauterine injections. Kurz ascribes much of the benefit in the use of this treatment to the absorption of the alcohol and carbolic acid.

THE MODIFICATION OF THE MILK CURD IN INFANT FEEDING.

ROTCH (*Boston Medical and Surgical Journal*, Feb. 7, 1889) has experimented in making the curd of cow's milk lighter and more diffusible for infant feeding. He finds dilution with water, or lime-water, the best means of accomplishing this result. Substances added to separate the curd, as Mellin's food, cracker-crumbs or bread-crumbs, were much less efficient than dilution with water. Lime water is the best corrective for acidity.

FOUR CASES OF POLYMASTIA.

AUVARD (*Archives de Tocologie*, No. 10, 1888) reports four cases of supernumerary mammæ, located in the axillæ, becoming enlarged and painful at menstruation and lactation, and accompanied by normal thoracic mammæ.

INFANT MORTALITY CAUSED BY SYPHILIS.

PILEUR (*Bulletins de la Société Obstétricale*, No. 11, 1888) has made extensive investigations regarding fœtal syphilis among the inmates of the reformatory and prison of Saint-Lazare, Paris. From his elaborate statistics, he concludes that of every 100 women of average condition in life who become pregnant, 14 become syphilitic. Of 100 children conceived by syphilitic mothers, 7 only survive the first months of existence. Of 100 children conceived in Paris, 13 perish from maternal syphilis, excluding all other causes of infant mortality.

Pileur estimates that 64,657 conceptions occur yearly in Paris, of which 9051 are by syphilitic mothers. Of these, 8418 perish *in utero* or soon after birth; 633 only survive. [Pileur's estimates of conceptions are obtained by collecting births, miscarriages, and abortions.—ED.]

THE LOCATION OF SPONTANEOUS RUPTURE OF THE UMBILICAL CORD,
A MEDICO-LEGAL POINT.

TRACHET tabulates 18 cases of spontaneous rupture of the cord in unattended labors, concluding that the point of rupture is generally at an extremity, placental or umbilical; rupture in the middle of the cord rarely occurs spontaneously. As a medico-legal point, this will aid an inquiry to determine a question of possible fœticide.

PUBLIC HEALTH.

UNDER THE CHARGE OF

SHIRLEY F. MURPHY,

LECTURER ON PUBLIC HEALTH AND HYGIENE, ST. MARY'S HOSPITAL, LONDON.

EPIDEMIC OF PNEUMONIA.

In June of 1888 Nantes was the scene of an epidemic of pneumonia occurring principally amongst the workers in a special factory. The details of the industry given by Dr. Ollive, of Nantes, will serve to show the kind of work on which those who suffered were employed. The manufacture is that of manure; the factory contains phosphates and clinkers from furnaces where dephosphorization of steel has taken place. These clinkers, which come principally from Middlesborough, are in the form of a grayish-black substance of considerable density and variable volume, and they have to be reduced to

dust. For this purpose they are thrown under cast-iron grindstones placed vertically, and thus, by the rotation of the wheels, the clinkers are crushed; the dust is then carried into bolters, and afterward put into bags. This dust is rich in phosphate of lime, of iron, and of manganese, and contains also iron and quicklime. In order to decrease its richness, it is mixed with inert materials. These operations cannot be accomplished without the air of the chambers being saturated with dust.

The factory contains a tub of water used for supplying the boiler and other purposes; this water is taken from the Loire, being pumped into pipes; samples were analyzed, showing that those taken at low tide contained ten times as much nitrites as those taken at high tides; both were ammoniacal, and swarmed with microorganisms. An examination of the factory was made, and it was found that the cold was intense, as, owing to its construction, it resembled a long passage, a current of air always passing through it; other factories in Nantes were inspected where the work and dust are the same, but no cases of pneumonia could be traced. Those who were attacked in this factory had been employed but a short time, varying from fifteen days to three months, the disease was of great severity, for of 13 who were attacked 11 died. In addition to these cases, there were in the hospital 14 persons suffering from pneumonia, who had not been employed in the factory, and they all recovered. The first factory case occurred on May 28th, the last June 26th; soon after the factory was closed, and from that date the cases in the town began to diminish. Information was also obtained from Middlesborough as to methods of conducting the operation of crushing the clinkers in that town, and it was stated that diseases of the respiratory organs were very common among those who worked in similar factories.

Simultaneously an epidemic of pneumonia occurred in Middlesborough, of which Dr. Ballard, of the Local Government Board, London, gave some account to Dr. Ollive. He stated that the clinkers are crushed to form manure, and the workpeople believe the dust to be the cause of the epidemic, but the disease was not limited to those who work in the factories, or to their neighbors, but extended to certain districts two to four miles distant from Middlesborough, women and children not escaping, though the principal sufferers were men. The medical men of the neighborhood consider the disease to be an infectious fever. Dr. Ballard stated that his inquiry was still proceeding.—*Revue d'Hygiène*, tome x., No. 9, September 20, 1888.

LEAD POISONING IN POTTERS.

In a Russian paper published early in 1888, DR. RÜSSKIKH relates his experiences with regard to cases of lead poisoning among potters in and near Ekaterinburg, an Ural industrial town. He states that during the last eleven months he found it necessary to send four potters to the hospital, one of whom was suffering from paresis of his hands and colic, another from arthralgia and colic, and the other two from severe colic alone; milder cases, such as slight saturnine cachexia, he treated in their own homes. A boy, whose business consisted in agitating molten lead, was found to have a blue line along the gums after only one month's work, and visitors to the potteries cannot fail to be struck with the paleness, puffy faces, and apathetic, slow

movements of the workers. Dr. Rüsskikh recommends various precautionary measures to aid in preventing injury to the potters: That quartz should be mixed with metallic lead and also minium before being melted, that the melting oven should be provided with a hood to prevent the escape of lead dust, and that the chimney should be constructed in a hermetically sealed fashion; that grinding and agitating lead should be done by horses, as in many potteries, that children under sixteen years should not be employed, and that workpeople should be prohibited from eating, drinking, or sleeping in the workshops. And he further recommends the erection of spacious, well-lighted, ventilated, and heated workshops supplied with plenty of good water and clean lavatory accommodation.—*Sanitary Record*, vol. x. part 112, October, 1888.

DISINFECTION BY STEAM.

Experiments with PROF. VAN OVERBEET DE MEYER's apparatus were made during October at Bermondsey, London. The apparatus consists of a square box of any size desirable, with an outer or water jacket, a furnace underneath, an inlet for steam at the bottom, and an outlet for it at the top. Amongst other things, some cholera germs in a test tube, and two sets of bacillus anthrax in thread-like form, one set in sealed test tubes not disinfected, were placed in the centre of a blanket, in which was also a thermometer and an electrical apparatus containing a soft metal, which melted at 100° C., and was connected with a bell outside. In six and a half minutes after closing the apparatus steam began to escape, and in ten minutes the bell rang, showing 100° C. had been reached. The time allowed for disinfection was forty minutes, and the articles were taken out. There was a pillow, a thick overcoat, and some colored ribbon; the steam had penetrated everything, but even the color of the ribbon was uninjured, and the things only required to be dried by exposure to the air. The test tubes were then placed in an incubator; two contained anthrax and cholera which had been disinfected, and two, for the purpose of control, which had not passed through any operation. The following were the results: at 30° C. the control anthrax tube developed slight cloudiness in 24 hours, and was typically an anthrax culture in 27 hours, and the control cholera tube became cloudy at 37° C., but the tubes containing anthrax and cholera germs, which had passed through the oven, showed no signs of growth, though exposed to 37° C. for 78 hours.—*Sanitary Record*, vol. x. part 112, October, 1888.

ARSENIC.

MR. STOKES, public analyst for the Paddington district of London, has lately drawn attention to the amount of arsenic contained in household things. He states that he examined a number of imitation Indian mus-lins and cretonnes, and twenty-three per cent. he found to contain arsenic in appreciable quantities, the highest proportion being two and one-tenth grains per square yard; the colors in which the arsenic was chiefly found were terra-cotta reds and greenish-browns. In two cases medical men had brought the samples, cases of arsenical poisoning having occurred; in one case, six or eight work-

girls, employed in making up the material, were taken ill. Mr. Stokes also examined a green mat in use in his own house, and a cardboard box for bon-bons. The mat, which weighed 9 ounces, contained 21 grains of white arsenic; the box, which measured $5 \times 1\frac{1}{2}$ inches, contained one-tenth of a grain of white arsenic. Ten per cent. of wall-papers analyzed contained arsenic, and, of late years, it has been found in playing cards, the glaze of enamel stew pans, and in some furs, those prepared by amateurs. Mr. Stokes recommends that the use of arsenic for producing colors should be prohibited by law.—*Sanitary Record*, vol. x. part 113, November, 1888.

TYPHUS FEVER IN EASTERN GERMANY, AND NECESSARY PRECAUTIONS.

In the third number of the *Vierteljahresschrift für öffentliche Gesundheitspflege* for 1888, appears an article on typhus fever considered from a hygienic and sanitary police point of view, by DR. SIMON, of Breslau, a part of Germany which suffers more than almost any other from typhus. He points out the difficulties which until recently prevented the diagnosis of the disease, but said that the enormous contagiousness of typhus has aided the sanitary authority in early recognizing an outbreak; typical cases, he found, occurred mostly when the epidemic is at its height. The disease is spread by tramps and vagabonds, and finds a suitable soil for propagation wherever the ground has been rendered damp and unhealthy from floods, or in the overcrowding of small, damp, badly ventilated dwellings, where dirt and poverty are to be found. The special localities in Germany where typhus is almost endemic, are those provinces nearest to Russia, such as East and West Prussia, Posen, and Pomerania, and it increases in intensity in proportion as it nears the Russian frontier. Dr. Simon also gives an account of epidemics which occurred in 1868 and 1876 to 1878, in East and West Prussia, and in Breslau, showing that in the latter city the one quarter in which the disease was most severe, was that which contained marsh land and stagnant pools of water; he also states that, after a thorough drainage and canalization scheme was carried out, the fever no longer appeared.

He then proceeds to consider the precautions to be taken to prevent epidemics of typhus in districts where for years the disease has been endemic, and states that they can be most efficiently carried out by the coöperation of the State, the communes, and private individuals, by raising the standard of culture and cleanliness amongst the people, and by an improvement in trade, and consequently in the circumstances of the poor. The local authorities can aid by carrying out drainage schemes, by enforcing cleanliness in houses, by preventing over-crowding, and by providing suitable accommodation for all classes. There should be a larger number of hospitals in the districts than at present exist; where, if possible, there should be thirty beds available for every 10,000 inhabitants. The local authority can also make suitable arrangements for disinfection, and also for ambulances which would be available in case of need. Strict watchfulness should be exercised over small inns and places where tramps are likely to assemble, and on all occasions of pilgrimages, emigration, fairs, and other times of collection of crowds, great care should be taken to enforce sanitary measures. These precautions must be taken before the outbreak commences, but as soon as the first case occurs, notifica-

tion of all doubtful cases should be insisted on; all houses should be visited in search of sick persons, and when found they should be isolated, if possible in hospitals, if not, in their own homes, where daily disinfection should be enforced according to the Berlin regulations of 1887 for disinfection. In country districts, where it is difficult to obtain nurses or persons who understand disinfection, special provision would have to be made by the local authority; they could probably obtain the necessary staff to carry out the instructions from the nearest town.

During times of epidemic prevalence of typhus, all infected inns, all schools and insanitary dwellings should be closed, and it would be well to postpone the meeting of large numbers of persons for manœuvres, public vaccination, or other purposes. The arrangements for disposal of the dead must necessarily be carefully attended to; bodies should not be washed, but laid in cloths soaked in a solution of carbolic acid, and buried as soon as possible. Dr. Simon also considers the public mind should be kept as tranquil as possible by means of constant reports in the papers as to the state of health of the district.

INSPECTION OF MEAT.

It was decided in 1883 in Berlin by the town authorities, that all fresh meat not slaughtered in the public abattoir should be subjected to an inspection by competent officers before being permitted to be sold, but, owing to a variety of reasons, it was not until April, 1887, that this could be carried into effect. In the *Vierteljahresschrift für öffentliche Gesundheitspflege*, Bd. 20, Heft 4, 1888, DR. HERLIVIG, superintendent of the meat inspectors, gives an account of the work which has since been accomplished. The most difficult task was to find suitable places for the inspection stations, and also trustworthy assistants in this work of the authority; what was suitable for Cologne, Bremen, Hanover, and Munich, did not seem so for Berlin, and even the most careful inquiries proved at first unsatisfactory. Amongst many the feeling was that this inspection was unnecessary, and that if carried out it would endanger the fresh meat trade in the market, that the butchers' stalls in the new market would be empty, and that, on account of want of competition, the price of meat would be very much raised. Besides, it was urged that of the few butchers who might continue their trade, none would bring diseased meat to the station.

However, in spite of all opposition, the work of inspection was commenced, and has proved most successful. At first there were eight inspection stations, all close to the main thoroughfares or railway stations where meat would arrive, or near the market places, and one was erected in the central abattoir itself, so as to be accessible for the eastern portion of Berlin, but this last station was soon given up, as the butchers from the suburbs preferred to buy either meat which had been killed, or to kill it at the public abattoir. One station, that in the central market place, is always open, but the hours for the others vary according to the work, some being required from 3 A. M. to 10 A. M., others from 12 to 7 A. M., and some from 7 P. M. to 7 A. M., when there is much work to be done. No inconsiderable amount of trouble was taken to obtain the necessary staff, which consisted of 116 persons, and these on Tues-

days and Fridays had to be supplemented by 40 to 50 meat inspectors and various veterinary surgeons. The amount of work to be done at times at one station may be shown by the number of animals inspected on one special day: 371 quarters of beef, 403 calves, 147 sheep, and 515 pigs. The veterinary surgeons and meat inspectors were appointed six months before the opening of the stations, so that they might become familiar with the inspections at the abattoir, and thus commence their work of examination without any delay.

The stations consist of an office, two adjoining rooms, one for microscopical and one for macroscopical investigations, and an observation room for the meat; the chief of the station is a veterinary surgeon, and one of the meat inspectors, who has control over the other inspectors, takes his place when absent. As soon as the meat arrives in front of the station, the officials commence their work; the unloading of the meat by the butchers has to be watched, to see that they come in turn and that more meat is not brought in than can be inspected at one time. The butcher then pays for the inspection, and his list having been compared with the meat brought in, the inspector commences his inspection of the meat in conformity with the regulations in force. According to the condition in which the meat is found to be, it is stamped by one of the officials, and either taken away at once by the butcher, and kept for further examination, or the police are communicated with and the meat detained. Every butcher obtains a printed form stating the kind of meat examined for him at the station. All lymphatic glands are especially examined for signs of tuberculosis or pneumonia, and in cases of doubt the meat is detained until it can be proved to be satisfactory.

All meat brought for inspection must be taken from animals which, before being slaughtered, have undergone examination and been certified as not suffering from disease, and this certificate is kept at the inspection station. These certificates are not always given by veterinary surgeons, but if the animals are examined by trustworthy persons accustomed to signs of health and disease in animals, that is all that is necessary.

The greatest watchfulness is needed to prevent meat being sold as inspected meat until after examination, and to insure that all fresh meat does really come to the station as soon as it arrives in Berlin; in these matters the police and railway officials are of great service. At times evasion of the regulations takes place, but it is almost impossible to prevent it in a large commercial city; but very much has been done to insure that all the *chief* butchers' stalls and shops shall only contain inspected meat, and it is hoped later to control all meat which is prepared in hotels and eating houses, and even still further, to inspect all materials used for such food as sausages, preserved meats, and ham. Until this regulation is enforced, meat which is diseased and that which is not inspected will be used for such purposes without it being possible to prevent it.

Last winter, it happened that a butcher from the suburbs brought a quantity of meat to one of the inspection stations, and while this was being examined, one of the officials informed the presiding veterinary surgeon that on the cart outside was a whole pig which had been slaughtered. The butcher then stated that this was for a restaurant, and did not come under the law of inspection, but the veterinary surgeon ordered a mark to be placed on the pig

and the cart to be followed, so as to ascertain the truth of the butcher's statement; instead, however, of taking it to a restaurant, he took it to his own stall in the market, where the officials from the station took possession of it, and when examined it was found to be extensively diseased. There was no doubt the butcher knew its condition, and thought to escape inspection by making such a statement. Very many similar cases were discovered and punishment inflicted, but it is certain many others escaped detection, since, if meat is found at a butcher's which has not been examined, he can state it is to be manufactured into sausages, and nothing more can be done, even though it is probable the meat is afterward sold as fresh meat.

The fresh meat trade, however, which was thought to be endangered by this system of inspection has, during the past year, increased rather than diminished, and the price of meat has not risen; indeed, the cost of dead meat is less than the original cost of living animals at the market. The meat inspection in the provinces has also been more carefully performed since irregularities were discovered as the result of inspection of meat brought to Berlin, and thus a marked improvement has taken place in the meat trade with the provinces. The total number of animals examined during the year was 91,610 sheep, 99,691 pigs, 143,955 calves, and 103,359 quarters of beef. Of the meat rejected and handed over to the police as unfit for food very much contained tubercle; trichinæ and measles were present in the pork eighteen and seventy-eight times, respectively, while in more than 1000 calves the meat was too watery to be fit for food; in some, echinococci were found; in others, thread-worms; and a great deal of meat was detained on account of its having become decomposed. In thirty cases the officials belonging to the inspection stations detected meat exposed for sale that had not been inspected, or that had already been confiscated by the police.

"TICKETED HOUSES" OF GLASGOW, SCOTLAND.

At a meeting of the Glasgow Philosophical Society, in November, 1888, DR. RUSSELL, the Medical Officer of Health for Glasgow, read a paper on the "ticketed houses" of Glasgow, with a view to showing the condition of the occupants, and in what way an amelioration of their lives might be effected. He introduced his subject by showing how the death-rate in towns rises with the diminution of the size of the house, with especial reference to the mortality statistics of Glasgow after an investigation made in 1885. He illustrated by a diagram and by tables that 70.8 per cent. of the population lived in one and two-roomed houses, and contributed 79.4 per cent. of the deaths, while the remaining 29.2 per cent, living in houses of three or more rooms, contributed only 20.6 per cent. of the deaths.

As to the classes of disease in which these deaths occurred, taking the death-rates in the large houses as *unity*, the death-rate from zymotic diseases was 2 in medium-sized houses, and 4 in small houses; from diseases of the lungs it was 2 in the medium sized houses, and 3 in the small houses; and from diseases of nutrition special to children it was 2½ in medium-sized houses, and fully 5 in the small houses. The death-rates in the different districts ranged from 16 to 42, and since 70 per cent. of the population live in one or two-roomed houses, it is amongst these that the solution of the problem

must be sought, and yet even in districts composed of the same houses the death-rates differ as widely as 23 and 42. At that point in his address Dr. Russell explained the meaning of the words "ticketed houses."

In Glasgow the Police Act enables the occupation of a house of three rooms or less to be regulated, and a tin plate is affixed to the outer door, stating the cubic contents and the proportion of inmates allowed, giving 300 cubic feet per adult or two children under eight years. There are in Glasgow 23,288 ticketed houses, and about 35 per cent. of the one-room population and 14 per cent. of the two-room population live in these houses. These ticketed houses have nearly all been parts of larger houses divided by partitions, or even parts of single rooms in larger houses; and, as a consequence, the light and ventilation are defective, the stairways crowded, and the sanitary arrangements inadequate. As compared with model buildings, the cubic air spaces of the ticketed houses are very much less—about one-half, and the houses are mostly overcrowded when inspected during the night. The rent paid for the accommodation obtained in these ticketed houses is also very much higher than in the model dwellings; but then the class of people who inhabit the former would not be admitted into the latter houses, they must reform before they can live in wholesome houses, and until then they continue to pay dearly for a house without any of the conveniences or comforts of life.

The only step to be taken by the authorities, according to Dr. Russell, is to improve the existing dwellings, and to see that the small houses which are being built, are up to a reasonable standard of wholesomeness; then, also, in Glasgow is wanted the power of dealing with unhealthy dwellings, such as is possessed by the Edinburgh authorities in their Police Act (1879), by which the medical officer of health and borough engineer can certify to the magistrates and council that a house is unfit for habitation, and they may order that after a certain date it shall no longer be inhabited, a penalty being inflicted if the order be not complied with. In addition to all that officials and authorities can do, there is still much work for the private individual; Artisans' Dwellings Companies might be started to build tenements and help to elevate the 75,000 inhabitants of the ticketed houses, and Open Spaces Associations would do much to lower the death-rates. Or private individuals might acquire tenement houses and introduce into the relation of landlord and tenant a feeling of friendly interest and moral responsibility; or they might undertake the agency of properties held by private individuals, and insist on the maintenance of the property being the first charge on the rental, and these are probably the best directions which private enterprise can take.

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TREATMENT OF POTT'S PARALYSIS BY SUSPENSION, ETC.

By S. WEIR MITCHELL, M.D.,
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I HAVE seen in the last ten years many cases of paralysis, the secondary results of angular curvature of the spine, and twice I have met with these palsies where there was tenderness over two or more vertebræ and local elevation of temperature *without* any visible curvature or projection.

It is hardly necessary here to dwell upon the causes of these palsies. They are due to inflammatory thickening of the membranes, causing pressure, which leads to myelitis and local atrophic destruction in the areas so compressed.

More rarely—very rarely—the whole bony spinal structure is so damaged as through its collapse to lead to pinching of the cord. In either case there may be, finally, degenerative changes in the cord below the portion diseased by pressure. Owing to the fact that the front of the spine suffers most, motion is primarily impaired, and sensation slightly, or not at all, or only much later in the case. Excessive reflexes early announce the interruption of nerve paths and the presence of irritative changes, and only cease to exist if (as is usual) degenerative alterations affect the regions below the seat of carious disease. Finally, sloughs may occur, and death from exhaustion.

In other cases to be found in every abode of incurables, the palsy, in whatever degree it be present, is a thing for life, and by no means the finally curable matter which many assume it to be. The common his-

tory of mild cases is one of motor loss with only more or less numbness, and the usual excess of reflex activity.

For many years of my life, carried away by modern authority and example, I put all cases of Pott's paralysis at rest, used tonics and oil, and cauterized the back. In most instances this method answers. It is slow, but it suffices. The spinal curve left to itself solidifies—the palsy fades away. The treatment is wearisome and confining, but at last the patient gets up and puts on a brace.

After some years I met with two cases in succession which did not get well at all, and, about this time, I found one or two children who were sure to die of tubercle if left in bed. In despair I fell back upon the treatment by suspension advocated by my father, Prof. J. K. Mitchell, in 1826.¹

As soon as I began again to use this simple means, I saw that it was admirably effective. It lets the patient get out of bed; it distinctly alters the pathological curve of the spine; it gives ease and relief to aches; it seems to act with more speed than other plans, and, when these have failed, it gives a new resource.

For the orthopædist of to-day the back is to be splinted. The conditions in Pott's disease are likened by him to those of a fracture; but if compared to any, it should be to one of the thigh where the muscles are continually pulling at the fragments. The problem is this: If we draw upon the bent spine of caries, so as slowly to alter its curve, will the gap we create be filled up by tissue firm enough for support? It seems to be so. So much for the mechanical part of the question. It is needless to go further as to a matter settled by numberless cases.

When, in addition, we come to ask how extension acts upon the spinal cord, and the inflammatory products which compress it, the question is more puzzling. Why is it that pulling at the curve, in some way before we much alter that curve mechanically, and often in a few days, so changes the conditions *within* the canal as to allow sensory impressions to pass the seat of stricture?

¹ Amer. Journ. Med. and Surg., Jan. 1826. Some of the earlier surgeons, as Glisson, used suspension from the head, even adding weights to the legs. Darwin, the author of "*Zoönomia*" (1801, p. 140), proposed extension by crutch supporters set on the arms of a chair with *occasional* aid by suspension from the head. He seems to have preferred suspension in bed on an inclined plane. M. Le Vacher, whom he quotes, in 1768 used suspension by the head, the weight being borne from the hips. Shaw (London, 1827, p. 98) treated his cases by the inclined plane. The cut in which he figures a suspension by the head (p. 107) refers to the use of a jacket (p. 32) as a support for the head-stay. Bamfield also seems to have used suspension, or mere sustentation, kept up from a jacket supported on the pelvis. Sheldrake's curious book (1798, p. 20, *et seq.*) figures a pelvic support for a head-suspending iron. Most of the attempts to suspend either used a jacket as a point of support, or employed the inclined plane. No reasonable systematic suspension slowly increased, or combined with a chance to move about, preceded the date of my father's paper of January, 1826. Pott's papers bear the title of "*Essays on Palsy of the Lower Limbs*," and his account of this spastic paralysis has the distinctness of a master hand. He speaks with some scorn of all machinery, and, as we all know, relied on issues, setons, and the like. Of late years Benjamin Lee, in an able paper, has recalled attention to the results and methods of J. K. Mitchell.

If the spinal cord, in place of hanging in normal suspension in the canal, is in these cases of caries bound fast and anchored, so to speak, it seems probable that any serious extensive force exerted on the angulated column of bones must more or less pull upon and disturb the binding masses of inflammatory deposit. I believe, however, that there is something more than this involved, and that the pull made on the whole length of the bony column, even when no meningeal inflammation is present, may, in some way, alteratively affect both cord and membranes through stretching of the cord and alteration of vascular conditions. With this idea I have twice used suspension in cases of spastic paralysis in which there was no caries. Both proved failures. Meanwhile, in Russia and France (if we may trust a statement in the *Progrès Médical* of January 19, 1889) this means has had a brilliant victory in a fair share of cases of posterior sclerosis. I am now experimenting with it in this disease. I have no intention of entering fully on the general question of the therapeutic management of spinal curves caused by disease. I believe that, with rare exceptions, all cases of deformity of spine from caries are best treated by early use of suspension, in conjunction with other means; but my present object is to show that Pott's palsy (as it was called) is also best dealt with by this plan.

As to the methods to be employed, something must be said. When in 1826 my father used suspension, he devised a number of ways of applying it so as to allow the child (for it was the young of whom chiefly he speaks) to sit up, to move in a spine-car on rollers, to ride a hobby-horse, or to sit in a swing. A curved iron, made movable and set by a screw, sustained the head-sling in which the head was held by the chin and occiput. His plan was cautious, and even deliberately slow, and as to it I leave the following quotation to speak:

"I have usually made very little extension for the first week; but have, thereafter, elevated the rod from one-eighth to one-fourth of an inch weekly, in proportion to the yielding of the spine. The progress of the reduction of the curve is, of course, more rapid at first; but as the curve is lessened, the mechanical advantage of the suspensory apparatus is equally diminished; and its effect is also resisted when that degree of curvature is removed which depended exclusively on causes having no relation to change of structure. But when a remnant of deformity is kept up by a change in the form of the vertebrae, and their *intermedium*, the operation of the remedies must be tedious as was the disease during its formation. When there is caries, we must wait for the production of new bone to support the wasted column; and when there is, without caries, a wedge-like condition of the vertebrae, we must rest on the slow, but certain, processes of absorption and deposition for a final cure. If undue pressure on one side of the column produces the deformity, the removal of the pressure to the other side must ultimately correct the distortion.

"For the fulfilment of the second indication nothing more seems necessary than to use the means suggested for the first. Cases *may* occur, of so violent and intractable nature as to demand continual support. Such must be kept, during the whole period of treatment, in one or other of the many instruments designed for the suspension of the head, and which at the same time interfere not with either general or partial exercise.

"It is not necessary to exceed four hours a day of suspension, but patients often like the application of extension to last longer, and they pass six hours or more in the head-slings."

All of the means alluded to I have employed, but in adults and in the wards of the Infirmary for Nervous Diseases, we make use in many cases of a cross-bar placed over a bed or a chair, and from this suspend the patient. A good plan for the chair suspension is to use a low seat on which are placed a dozen or less of thin one-eighth or one-quarter inch pieces of board. By removing one of these from time to time systematic extension is obtained.

My father usually proceeded, as has been seen, by cautious degrees. I, however, have been accustomed, especially in the young, or in young adults, to make at first a strong pull on the spine by suspension, and to leave the patient's sensations to govern the amount endurable. In younger people I follow my father's rule of very gradual increase in the amount of pull made by suspension. As it has become interesting to know how much pull on the bent spine is well borne, I have lately put a little steel spring balance in the suspension apparatus, with these results as to endurance. Many of these diseased people bear the pull of twenty to seventy pounds for four to six hours a day. The pain, the sense of gain, the fatigue, are good guides for us. A great variety of suspensory means may be used according to the site of the trouble, but it is so far clear to me that suspension by the head, partial or complete, aided or unaided, should be employed in every case where palsy is one of the results of the caries.

In cases of spinal maladies, to get the alternative of complete suspension, the plan of Matchoukowsky may be followed, or the plaster jacket used with or without additional pull on the head.

It is interesting to watch a case of Pott's palsy subjected to partial suspension treatment. The patient becomes more and more at ease, and, if in a wheel-chair, can move to and fro while suspended. In ordinary cases, where the vertebræ have not become reconsolidated in their new position, and where there is only a relative degree of motor palsy, the change, as I have said, is often so sudden as to excite surprise. In older or worse cases, where sensation has suffered, or where the third degree has arrived—that is, degenerative change below the curve—in all of these we must look for very slow gains, and welcome them first in the return of sensation, and then of the reflexes, from below upward.

Since writing this brief paper, I have read an editorial in *The Medical News* relative to Dr. Wood's method of making suspensions for the treatment of Pott's disease. It seems to me reasonable for cases of lower dorsal curvature alone, and I think it might be more so, if, while lifting from the jacket, a portion of the pull was made, also, directly through the head. I, myself, have never found anybody who would not bear.

this partial suspension from the head alone and for hours. The pull it makes from the head is a very direct one upon the spinal column; the pull made by Dr. Wood's jacket must distribute itself over considerable space, and much of it must fail to influence the spine. Thus in his method the amount of pull which really acts on the spine is impossible to determine, and must depend to a considerable extent upon the situation of the carious vertebræ.

I shall certainly in the future suspend with both head and jacket in lower and in even mid-dorsal curves, and I am now using the jacket in a case of extension for ataxia. In cervical caries extension from the head is imperative. In old consolidated spines with palsy not due to bony pinching of the cord, I would use both means of suspension, and daily prolong the amount of this treatment. In very bad early cases with abscesses, I should desire to use extension, at first, by the milder method of the inclined plane. As to the medical treatment of Pott's disease, it is needless to speak; we all agree as to that; and, of course, in every case of palsy electricity should be used to keep up the muscular nutrition. This may be aided by passive motions and mild effleurage of the skin; and, later, by deep kneading, never to last very long. Neither does suspension exclude the use of frequent cauterization, for which Charcot claims so much. I may add that I have seen suspension succeed where frequent use of the hot iron had failed. It is interesting to find that my father, who had twice been in the East, recommends shampooing, percussion, and friction for the children under treatment. It remains to defend my position by relation of cases, and I shall as to this limit myself to the narration of three cases, but I shall also quote others from my father's essay.

This present paper does not pretend to bring forward any novelty; but, as I find neurologists all adhering to methods of treating the palsies of Pott's disease which appear to me ineffective or irrational, I have ventured to set forth anew a treatment which had so large a success in my father's hands, and has now again had it in mine.¹

The following cases from his paper I quote, because his essay is not easily to be had, and because of the brilliant results he relates in cases of caries in various parts of the spine, and in instances of paraplegia following Pott's disease.

"I have seen no case of *posterior* curvature which did not cease to cause pain so soon as it was subjected to the action of the spine-cart. Irritation ceased, the tenderness of the part departed, and where the legs were affected they recovered their ordinary powers. In fine, to all appearances, there ensued a complete arrest of the diseased processes. The recent writers object decidedly to the use of suspension in carious cases, on the supposition that there exists considerable danger of fracturing the spine at the diseased part.

¹ Gowers speaks of suspension as possibly advisable, especially in children, where other means have failed, where it is said to have been followed by instant improvement. He gives no authority.

even after ankylosis has supervened. After the occurrence of ankylosis there can be no good reason for using my instruments, unless the disease should extend itself further.¹ Where there is advantage to be derived from extension, I would use them, without much regard to such theoretical objections, because the objectors are not able to produce a single instance of such an accident arising from mechanical extension.²

"To demonstrate more clearly the utility of the plan of treatment proposed in this paper, I beg leave to describe a few cases.

"On the 1st of February, 1842, I was invited by an eminent physician to see with him a case of curved spine. A. S., a boy, about five years of age, was the subject of this disease. At that time his occiput rested on the *vertebra prominens* so as to prevent any portion of the neck from being visible from behind. The pressure of the head upon the space between the shoulders had caused painful excoriations. In endeavoring to cleanse the back of the neck, it was necessary to insert a wetted cloth edgewise, as any attempt to introduce a finger gave considerable pain. Besides this posterior curvature which formed a very acute angle about the uppermost dorsal vertebra, there existed the serpentine or lateral curvature so well described by Dr. Shaw. This curvature was convex toward the right shoulder above, and convex toward the left hip below, a direction of lateral curvature from which it seldom, if ever, deviates. At the angle caused by the *posterior* curvature the patient felt, at times, severe pain, particularly when in motion. Indeed, so painful was a rotary motion, especially in bed, that he found it necessary to call for the assistance of an attendant when desirous of changing his position. During the greater part of the day he sought refuge from pain in bed, or in the arms of his mother or his nurse. His pulse was rapid, without force or regularity. Exacerbation of febrile symptoms in the afternoon, and colligative sweats during the night, afforded proof of a hectic state of his system. His appetite was irregular, his tongue encrusted with a moist, russet-colored substance, and his breath very fetid. His bowels were usually costive, but sometimes relaxed. At times he complained of severe pain in the epigastric region. His skin was, during the day, dry and rough, and was covered with bran-like spots, as if the cuticle was separated from it in scales. For a few days before the consultation, the child had lost in great measure the power of deglutition. The water which he endeavored to swallow generally escaped from the angle of his mouth.

"The remedies used during the previous treatment of his case were, laxatives occasionally, and afterward the chalybeates, and some other tonic medicines. The child, before it became too feeble to endure exercise, had been directed to swing by grasping a suspended bar of wood and supporting its body by means of its hands and arms. The exercise was found to be too violent, and could not be endured long enough to produce beneficial results.

"In consultation, February 29th, we resolved to try the effect of such suspension as would relieve the patient of a portion of his weight, and at the same time permit him to take exercise.

"The mechanical deformity was treated by the chair with rockers and the spine-cart. After a short time the child refused to sit in the chair, but continued to use the cart four or five times a day. From the moment at which these means were applied there was exhibited a general amelioration of all these symptoms. The curve became less and less conspicuous—that which was lateral entirely disappeared—and there now remained of the angular projection only enough to show where the disease had been seated.

"On the 2d of June I deemed professional attendance no longer necessary, and to this day³ the child remains robust, active, and cheerful, without deformity which would be observed by those who had not been acquainted with the previous history of the case.

¹ This is not the case however in curvature with paralysis. The curve may be old and unchangeable, but, nevertheless, the palsy will get well after use of suspension.—S. W. M.

² North American Medical and Surgical Journal, January, 1826, Dr. J. K. Mitchell

³ He is still alive and well.—S. W. M.

"Several other cases resembling the above in the angular and lateral curve, the impaired digestion, and roughened skin, have been treated with equal success. One of them, the case of E. F., fell into my hands on the 4th of September of the present year. The patient is, at the date of this paper, December of the same year, in good health, and rather more than two inches taller, in consequence of this straightening of the curve.

"One of the most difficult and intractable cases I have yet encountered was that of E. C., a girl, four years old. This child had a posterior curvature, seated nearly in the middle of the back, and a serpentine curve so great as to cause the lower limbs to repose on the crest of the os illi of the right side. The projection of the shoulder and hip was such as to excite the notice and sympathy of every one. The child remained about four hours a day in the spine-cart, and was left at liberty during the remainder of the time. At present the dorsal prominence is small and apparently diminishing; and although the child still exhibits some lateral curvature *when it is off its guard*, it is able to carry itself, when it chooses, nearly in an upright manner. While *in* the spine-cart no curvature of this kind is perceptible.

"James H., a boy, aged about seven years, was brought to me in May, 1824. He had evidently a disease of the middle dorsal vertebrae, by which the bodies of two, at least, of the bones appeared to be affected. A shuffling gait, observed about six weeks before, led to the examination of the case, and a physician at New Castle discovered the curvature. In this case one of our most eminent physicians advised issues; but as the mother was predetermined not to use that mode of treatment, the child was brought to me to be placed in a spine-cart. One was accordingly obtained, but was not used regularly, because of the unwillingness of the boy to submit to any restraint. The progress of the complaint was rapid, notwithstanding the use of purges, baths, etc. At length the lower limbs began to fail in their office, and the poor boy was compelled very frequently to throw himself, for ease, on his face on the floor. When he ascended the stairs he was obliged to go on all fours. At this time he expressed greater willingness to endure the restraints of a machine, because he found himself more comfortable when in one. In a few days, strength and facility of movement returned, and since that period no increase of curvature has been perceived. His general health is now good, and he has a remarkably robust appearance. It may, in this place, be proper to remark that in every case, except one, in which these machines have been applied, either to posterior or lateral curves, the tone and vigor of the system have been immediately restored, and the pain and tenderness of the part concerned have disappeared."

The following cases are my own.

One, as yet incomplete, is interesting for various reasons. I merely give, at present, a summary of its notable facts.

Mr. T., aged thirty-six years, angular curve in mid-dorsal region.

Two years ago he first noticed paralysis of motion, in March, 1888. Sensation suffered some months later in both hands, and had been entirely lost for five months in November, 1888. There was also complete loss of reflexes below the navel. There were, also, rectal feebleness and vesical palsy. There was erythema of nates, but no sloughs. He had been ably treated by the usual means—rest, cautery, etc. His general state was good. Suspension was used in December, and gradually increased to two or three to four hours a day, and the pull from twenty to sixty-five pounds. In two weeks there was partial return of sensation, which slowly improved. There was also return of clonus. In five weeks there was very slight return of the power to move the second and third toes of the left foot. Since then there is very slow increase

of sensation, which varies daily, as does the growing power to move the toes.

Of the future of this case I cannot speak confidently. It shows certainly the influence of extension on a spine already considerably consolidated, and I mention it here as being one of the worst I have ever tried to handle.

C. C., aged twelve years, of apparently healthy family, without tubercular history on either side.

In March, three years before I saw him, he began to complain of pain in his back, where, on examination over the middle dorsal region, there was found a slight projection. The parents of the boy being in the lower ranks of life, little attention was paid to his complaints, but, after six months, the curvature of the spine and the increasing amount of pain rendered it necessary for a physician to be seen. Under the advice of this gentleman, the child was given an ordinary spinal brace, which, however, did not appear to answer any better purpose than that of irritation. At this time there was more or less fever in the evenings, and a great deal of pain running round the flanks from the seat of the disease.

Late in the year there was more or less numbness in both extremities. In the fall the patient was placed in bed, where he remained all the winter; in fact, most of the time since, up to the date of my attendance—that is to say, for two and one-half years. During this long repose the curvature of the spine increased, the pain grew greater, and the limbs became numb. The patient was completely insensible to touch or to pain, and very soon after there arose, also, an increasing difficulty in motion.

When first I saw the lad, two years and a half from the period at which the disease began, this was his condition: The disease seemed to have followed the ordinary course of spinal-pressure paralysis: First, pain, loss of sensation in all of its kinds, then difficulty in motion, and, finally, loss of motility.

The reflex excitability went, however, far beyond the ordinary expression. A light blow with a percussion hammer on the shin caused the leg to fly up a foot or two from the bed. When six months later I saw him again, there was a marked degree of degenerative change in the muscles below the waist, and there was neither sensation, motion, nor reflexes. Water accumulated in the bladder, and had to be drawn off from time to time. The condition of the rectum was such that the feces had to be dug out, and the state of the child was most pitiable. The only thing which he lacked to complete the misery of this picture was the presence of sloughs, such as existed in one other case to which I shall call your attention.

So far as treatment is concerned, he had had cauterization, long rest in bed, with efforts to extend him while there, and a plaster jacket, which, so far as I could learn, had been very well put on. None of these means had done more than to make him comfortable by the relief from pain.

It was evident that in this case there had been pressure from hypertrophic thickening of the dura, since the curve was not sharp enough to have punched the cord. But, also, it was clear that there had been a degenerative change below the pressure point, because the reflexes had

entirely disappeared, and because the muscular responses to a blow were feeble or absent. Certainly, there was little to encourage treatment.

I directed the parents of this boy to have made a wooden support from which was hung a cord, to which was attached an iron arrangement according to the figures in my father's paper of 1826. It was found, after two or three days, when the child was sitting under this support with his head lifted and fully extended, that the pain did not trouble him, although he had never before been free from pain when sitting upright since he was attacked by the disease. This fact made him very willing to undergo the discipline necessary, and his parents were enabled in a few days to increase the amount of suspension to two hours morning and evening. No attempt was made to measure the suspensory pull, of which, however, I shall presently speak in regard to another case. The amount of lift exerted by this little apparatus was simply that which was comfortable, and never went so far as the whole weight of the body. The result was most striking. Within ten days after the suspension began there was a considerable return of active pain in the legs, together with the positive sense of touch over a large part of the limbs. Three days later he could tell which toe was touched, and he had generally good locality impressions as to touch within two or three inches of the place selected for trial. The pain sense came back nearly at the same time, and it then seemed to me to be extraordinarily acute.

At this period, also, there arose certain alterations in the nutritive state of the limb. This seemed decidedly apparent to his parents and friends. The skin became less dry. The brawn-like hardness which I had seen about his ankles passed away very rapidly, and the general rigidity of the muscles lessened. It was fully a month after the suspension began before he recovered any power over his bladder. The return of capacity to empty the rectum was much slower; it had to be stimulated by electrical treatment. Thirty or forty days after the suspension began, motion could be made in the right great toe; from this motility spread over the whole right limb and then began in the left.

It is hardly necessary to trace this case further; it is only needful to say that there was gradual return of all the functions, so that, at the end of four months, I was willing to permit the lad to get upon crutches and to wear a plaster jacket, but for fully eight months he passed a certain length of time in the suspensory chair, or in a spinal car, somewhat similar in appearance to the one described in my father's paper.

This lad made a fair recovery—that is to say, there is now no loss of sensation in the limbs—and he is able to walk about with the aid of a stick. He is capable of earning his own living.

A. B. C., a physician, aged thirty-two, and unmarried. He comes of a family noted for health and long life; free from scrofulous or tubercular disease, and without history of cancer nearer than four generations.

Previous to 1883 the patient's health was excellent. Aside from the slight ailments of childhood he had been perfectly healthy; never had venereal disease. In July, 1883, while playing football, he fell, striking hard upon the back, others falling upon him. Notwithstanding the severe concussion, he was able, in a few minutes, to walk home, and recovery from the immediate effects of the accident took place quickly.

An urgent country practice called this gentleman out upon long drives

over rough roads, and, after some weeks, pain was felt in the right flank. This was occasioned by severe exertion or sudden jolt. No attention was paid to this at first; but the pain increased in severity and constancy until November, 1883, when driving had to be given up. The pain was confined to the right side, and was not felt in the back. There was no prominence of any vertebræ; no weakness of the limbs. Meanwhile the general health was good.

The use of the actual cautery once a week, and small doses of iodide of potash, colchicum, and guaiacum gave no relief; on the contrary, the pain and soreness grew worse, extending to the back.

In January, 1884, weakness of the lower limbs was noticed. This came on when walking up hill or walking fast. The patient's legs began to twitch and jerk, and he had a tonic spasm of the muscles of the legs on awakening in the morning. The knee-jerk was exaggerated at this time and so remained.

In March, 1884, a prominence of one of the vertebræ was observed, and the diagnosis of Pott's disease was made. A plaster-of-Paris jacket, the actual cautery, the bichloride of mercury, iodides, and tincture of iron were used without avail, and in one month paraplegia was complete. Sensation was also abolished. The sphincters were powerless; the urine became alkaline and loaded with phosphates; priapism was present occasionally. The legs were jerked about in almost constant spasms. The feet, when at liberty, were drawn up to the body, and had to be tied fast to the bed. The legs were greatly wasted. Soreness in the back and sides continued to be severe, and for only a few minutes at a time could the patient sit up in bed.

One year later, in very much the same condition, but with sloughs of the nates, he came under my care at the Infirmary for Nervous Diseases.

The treatment adopted was at first the prone position and application of bags of ice to the spine. After ten days, hot water and ice were applied alternately to the spine four times daily for about half an hour each time. The bed-sores were treated with ice and hot water and easily healed. At the end of five weeks of this treatment the first changes were noticed. The spasms in the legs diminished somewhat. Sensation was still absent; but in the third week of treatment, at first touch, and then pain and temperature sense began to be slightly noticed in the legs above the ankles. The sensory changes were trivial, and, after five weeks in the infirmary without increase of betterment, the patient was sent home, and a plan of treatment adopted to which his cure is due.

Two weeks after his arrival at home (there having been no further change under ice and heat) a system of spinal extension was used. To the back of a wheel-chair was attached a steel shaft, curved so that it extended over the head. A head-piece, similar to that used in extending patients in applying plaster-jackets, was attached to this shaft. At first only a moderate pull was made, as it was somewhat uncomfortable, causing slight pain at the curve of the back and sides, and in the neck. But the patient soon became used to it, and was finally, at times, suspended by the whole weight of the body—120 pounds. No injury was done by this.

The back of the chair in which the patient sat was elevated many times a day, so that he was in a sitting position with a steady extension of the spine. Care was always taken that the back of the chair was lowered to a reclining position before the head-piece was taken off. On

going back to bed the head-piece was attached to a pully over the bed, and thorough extension was used before lying down.

Hot water and ice were used every day, and faradic electricity to the paralyzed muscles. Improvement came by degrees and sensation improved continuously. In three months the patient could move one toe a very little; in a few months he could stand, and in a year he could walk about. As motion improved, power over the sphincter returned to full strength. Sexual power had been lost, but now was restored. As motor gain took place sensation also improved, and is now normal. The muscular spasms which had characterized the case gradually lessened, and their lessening gave some of the first gleams of hope in this dark experience.

The patient writes that he is still gaining strength and gradually resuming his accustomed work. Suspension has been given up by degrees; but still, if the back aches after being long afoot, he uses suspension for a little while as a relief. A spinal brace put on nearly a year ago, is still worn for ease and support.

The curve at the seat of the disease in the spinal column is considerably less than it was to begin with; the knee-jerk is still excessive—six and a half inches of foot leap, and there is slight ankle-clonus, equal on both sides. However, as the man can walk several miles, is practising his profession without pain, with all his bodily functions restored, I look upon his cure as one of the greatest triumphs it has been my fortune to witness.

My conclusions are that suspension should be used early in Pott's disease.

That used with care, it enables us slowly to lessen the curve.

That in these cases there must be in some form a replacement of the crumbled tissues.

That unless there is great loss of power, the use of the spine-car or chair, etc., of John K. Mitchell, enables suspension, especially in children, to be combined with some exercise.

That no case of Pott's paralysis ought to be considered desperate without its trial.

That suspension has succeeded after failures of other accepted methods.

That the pull probably acts more or less directly on the cord itself, *and that the gain is not explicable merely by obvious effects on the angular bony curve.*

That the now well-known influence of extension in Pott's palsy makes it probable that in other forms of spinal disease, not due to caries, extension in various forms may be of value, as has apparently been of late made clear.

That the methods of extension to be used in these and in various cases may be very various, only provided we get active extension.

That the plan and the length of time of extension must be made to conform to the needs, endurance, and sensation of the individual cases.

ON THE ETIOLOGY OF DIPHTHERIA.

AN EXPERIMENTAL STUDY.

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PART II.

SIXTEEN of the 24 cases of diphtheria which we have studied, both morphologically and by the culture methods, Nos. I. to XVI., inclusive, occurred in a large foundling asylum with many inmates, in which the mortality each year, especially in winter, is large—particularly so during the prevalence of measles and scarlatina; 5 of these cases, Nos. XVII. to XXI., were from another large children's asylum in another part of the city, in which, also, during the winter season, the mortality from diphtheria is usually large; 1 case, No. XXII., was from a smaller children's asylum, in still another part of the city, in which diphtheria is of occasional occurrence; 2 cases, Nos. XXIII. and XXIV., were from private practice in an adjoining town. Nine of the cases were simple diphtheria, uncomplicated by any notable previous disorder; in 4 the local diphtheritic inflammation was preceded by a phlegmonous, suppurative, or erysipelatos inflammation in distant parts of the body; in 3 the diphtheritic inflammation was immediately preceded by well-marked scarlatina; in 7, by measles; in 1 by whooping-cough.

The only species of bacteria present in nearly all the cases (in all but two) in the pseudo-membrane was the *streptococcus*. This species was present in most of the cases in enormous numbers as shown by the cultures. In one case in which actual counts were made, it was found that from the invisible amount of material which clung to the tip of a fine sterilized platinum needle plunged into the softening pseudo-membrane from a bronchus, 124,300 colonies developed on the plates.

Cultures from the kidney, spleen, and liver were unfortunately not made except in some of the later cases; the results of these were as follows:¹ Kidney cultures in 3 cases; streptococci in pure culture in moderate numbers in 2 of them. Spleen cultures in 3 cases; streptococci in moderate or large numbers in 2 of them. Liver cultures in 3 cases; streptococci in moderate numbers in 1 of them. The streptococci were the only organisms found in these visceral cultures except in 1 case in which a few staphylococci aureus developed from the liver.

¹ The bacteria found in the lungs in these cases will be described later in connection with studies not yet completed by Dr. W. P. Northrup and the writer on the etiology of broncho-pneumonia of children.

The streptococcus was in all of the cases not only by far the most abundant form of bacteria in the pseudo-membrane, as judged both by cultures and microscopical examination of stained specimens, but it was the only form which appeared to penetrate the underlying tissues. While the streptococcus was most abundant in the pseudo-membrane and in the underlying necrotic tissue—and in these situations it was often present in enormous numbers—it was also found, usually scattered singly or in large and smaller masses, in the ducts of the mucous glands and in the lymph spaces of the submucosa. It was rarely found in the tracheal and bronchial lymph glands, and then only in the form of scattered single cocci or short chains. In the kidney, liver, and spleen I have never found the bacteria by staining even in those cases in which the culture method showed that it was present in small numbers. As judged by the culture method, the number of streptococci which these viscera contain is in nowise to be compared to the numbers present in the pseudo-membrane and underlying tissue. In the tonsil crypts, on the other hand, the number of streptococci found, both by the staining and by the culture methods, was often very large indeed.

The second most common form of bacteria in these cases was the staphylococcus pyogenes aureus or albus. While this species appears in cultures from the membranes in a large proportion of the cases, neither in numbers nor situation does it appear to bear any relationship to the extent or character of the pseudo-membrane. It was usually quite as abundant in the mouth or in the bronchial secretions as on the pseudo-membranes. It was more apt to be abundant when the membranes were softening, and in general its abundance seemed to bear a much closer relationship to the amount of catarrhal than of pseudo-membranous inflammation.

So far as the other species of bacteria are concerned, which were cultivated from these cases of diphtheria, some twenty different species were isolated, but they were either forms which control-examinations showed to be frequently present in the mouths or air-passages of healthy children, or were scattering forms occurring in greater or less numbers but with no uniformity.¹ The bacillus of Loeffler was not found in any of the cases.

In judging of the probable importance of the staphylococcus pyogenes aureus and albus which was so frequently present, although often in relatively small numbers, in our cases of diphtheria, it should be borne

¹ Two of the more common species occurring in the mouths of healthy children develop on agar plates in forms very closely resembling those of the streptococcus colonies in their early growth. These are, however, both short, stout bacilli, but the fact that when they first commence to grow they form delicate translucent dew-drop-like colonies quite similar to the streptococcus colonies might lead the inexperienced observer into error. In one of these forms, moreover, the short bacilli are apt to occur in chains which form a looped border to the colonies, closely simulating the beaded chains which fringe the edges of the streptococcus colonies in some stages of their growth on the agar plate. These I have called the "chain bacilli" of the mouth.

in mind that a long line of researches by a variety of observers has shown by actual cultivation that the staphylococcus pyogenes is very frequently to be found floating with the dust in the wards and operating-rooms of hospitals, and in many other places which are either overcrowded or filthy. It has, furthermore, been shown by repeated culture experiments that the staphylococcus pyogenes is a not infrequent inhabitant of the mouth and nose in health and disease. It has been found by Dr. T. M. Cheeseman in the dust of the operating-room in one of the large hospitals of this city. I have repeatedly found it floating in the dust of the rooms from which many of the cases above recorded of diphtheria were taken, and it has been found in some of the other rooms in the same hospital. I have cultivated it from the mouths of several children in the asylum from which most of our cases of diphtheria came who were apparently healthy, from the saliva in one case of whooping-cough, and in several cases of measles. I have found it in the mouths and throats of children and adults both well and ill in private houses and in our large city dispensaries. Finally, as stated above, the staphylococcus appears to bear no relationship whatsoever either in situation or numbers to the pseudo-membrane in the cases of diphtheria in which it was present. It would thus appear that from what we know of the biology and distribution of the staphylococcus, its occurrence in and about the membranes in so many of our cases of diphtheria cannot be regarded as of any especial significance so far as the etiology of the disease is concerned. It may act as a complicating factor in the disease—indeed, its well-known pathogenic properties would lead us to conjecture that it does—but this is at present the utmost significance which the facts will warrant us in attributing to it.

We are thus narrowed down in the analysis of the results of these examinations to the only species of bacteria which was present in nearly all of the twenty-four cases of diphtheria studied, namely, the streptococcus. To this species, then, we must now turn our attention.

The morphological and biological characters of the streptococcus found in these cases were fully worked out in each, and they were found exactly to coincide. The following characters, therefore, describe the species common to all the cases of diphtheria studied, and this species may be called, at least provisionally, *streptococcus diphtheriæ*.

STREPTOCOCCUS DIPHTHERIÆ.

MORPHOLOGY.—Sphero-bacteria, or cocci, varying in diameter from $0.75\ \mu$ to $1.2\ \mu$, average about $1\ \mu$. When growing freely on quite moist surfaces, or in fluid culture-media, such as beef-tea, they are apt to form longer or shorter chains. There is a marked disposition in the cocci which form the chains to be closely united in pairs, and thus appear as diplococci when the chains are forcibly torn apart (see Fig. 1, Plate II.). As the cultures grow older individual cocci in the chains are apt to grow

larger and more irregular in shape, apparently through involution changes. In rapidly growing cultures the individuals composing the chains appear not infrequently a little elongated in the stage preceding division, and a little flattened transversely to the axis of the chain when the division is just completed.

BIOLOGY.—These bacteria do not fluidify gelatine. The colonies are white to the naked eye when they have reached a considerable size, and under the microscope have a faint yellowish or brownish shimmer. They are immobile; their growth is in general slow, but is hastened at the temperature of 37° C. (98.6° F.). No spores are formed. Growth occurs both at the surface and in the depth of the culture-media.

Gelatine plates. On the second day, minute, sharp-edged, coarsely granular dark colonies appear, and become very gradually larger. As they grow older the colonies in the depth of the gelatine frequently become rough and irregular at the edges. They spread slightly on the surface of the gelatine, forming rough, often looped-edged, very slightly elevated disks.

Agar plates (surface plants). At 37° C., after twenty-four hours, minute, translucent, colorless, dew-like colonies appear, which, as seen under the microscope, have even or irregular edges, a moderately finely granular surface, and a faint yellowish shimmer. As the colonies become older (two to five days) their surfaces, particularly if the agar becomes a little dry, are apt to appear more coarsely granular. The outline of the slowly spreading colonies, as the growth gets older, is apt to become more or less irregular, from the projection of loops and strings of cocci, which, if the culture surface remains moist, may form a slowly spreading delicate pellicle of variously curved and contorted chains (see Fig. 2, Plate II.). Not infrequently the older colonies are more or less zonulated from successive rings of peripheral growth.

Agar-glycerine plates (glycerine 5 to 10 per cent.). The growth is essentially the same as in simple agar.

Blood-serum plates. The growth is much the same as on agar.

In *Beef-tea*, at 37° C., the growth is moderately vigorous, forming in twenty-four to forty-eight hours a considerable number of delicate white flocculi, which gradually collect along the sides or at the bottom of the tube. Growth at air temperature similar but slower.

In *Gelatine Tubes* the growth appears, at the temperature of the room, in from twenty-four to forty-eight hours, as a delicate, white, exceedingly finely beaded streak along the puncture-line, and is scarcely visible on the surface. After several days the central portion of the puncture streak becomes dense and whitish, and is beset on all sides with more or less discrete, whitish, spheroidal colonies, which may become as large as one millimetre in diameter. At this time the surface growth may be

scarcely perceptible, or may have spread a little as a delicate translucent pellicle. The gelatine is never fluidified.

In *Agar Tubes* the growth along the puncture-line is apt to be more even and continuous than in gelatine, and is never extensive, while on the surface it appears as a faint translucent sinuous-edged pellicle, rarely spreading more than 1 to 3 millimetres from the point of inoculation.

In *Blood-serum* tubes the growth is essentially the same as on agar, but a little more vigorous.

On *Potato* there is no visible growth, but there appears to be sometimes a very slight proliferation near the line of inoculation.

The streptococcus diphtheriæ is readily stained by the common aniline dyes, and both from the cultures and in the tissues retains the color when treated by Gram's method.

PATHOGENESIS.—The experiments upon animals were made with cultures from ten of the cases of diphtheria—Nos. III., VI., VIII., XIII., XV., XVI., XVII., XVIII., XIX., XXIV. These were cases selected at random from the different hospitals or houses from which most of the material was derived. Vigorously growing beef-tea cultures were, for the most part, employed from two to five days old. Such cultures are slightly turbid when shaken to break up the flocculent growth, and quantities varying from five drops to two cubic centimetres were used for each inoculation. The inoculations were performed with the usual precautions against accidental contamination. The very convenient Sternberg sterilizing injecting syringe was for the most part used. It does not seem to me necessary to give in detail a history of each of the inoculated animals, since the general results, so far as our subject is concerned, are the ends sought for.

Altogether, 80 animals—rabbits, hens, and pigeons—were inoculated with the streptococcus. The following is a summary of the results:

Hens. In hens (8 animals), the subcutaneous inoculation and the inoculation into the scraped or punctured mucous membrane of the mouth or trachea were entirely without result, save for a temporary redness of the mucous membranes following the local mechanical injury. Subcutaneous inoculation gave no results.

Rabbits. *Intravenous injections* (9 animals). The injection of from $\frac{1}{2}$ to $1\frac{1}{2}$ c. c. of beef-tea culture was made, with no marked effect in any case.

Subcutaneous and intramuscular injection (10 animals). These inoculations were made in the pectoral or thigh muscles, or beneath the skin in these regions. In 7 of the cases, there was a considerable formation of pus at the seat of inoculation, usually in the form of a small, circumscribed abscess. The streptococci were readily cultivated from these abscesses, unless they had become old and the pus quite dry and grumous, when

they were found in very small numbers, or not at all. In 3 out of the 10 cases, the result was negative.

Injection into the subcutaneous tissue of the ear of the rabbit (24 animals). In 1, there was no effect whatsoever. In 4, there was a slight, diffuse redness about the seat of inoculation, passing away on the second or third day. In 5, there was slight local redness, on the second day passing off, and the formation of a small subcutaneous abscess from the third to the eighth day. In 2, there was moderate local redness, followed by death, under symptoms of progressive weakness, on the second and fourth days. In 12 cases, there was well-marked erysipelatous redness of the ear, extending, sometimes, for an inch about the seat of inoculation, but most often involving the whole ear, and extending down into the head. The redness and circumscribed thickening of the ear in these cases were usually sharply defined and slowly progressive, as in typical erysipelas. The inflammation was established on the second or third day, accompanied by a rise of temperature of from 1° to 3° C. (32.8° to 37.4° F.). Resolution usually began on the fourth day. In 7 cases, resolution was complete; in 3, a small abscess formed at the seat of inoculation; in 2 cases death occurred, and in the second on the fourth day. No internal lesions were ever found in these cases of erysipelatous inflammation of the ear, nor was there, except in the fatal cases, much evidence of systemic disturbance. Streptococci were cultivated from the fluid exudation at the seat of the inoculation. The erysipelatous inflammation was more marked and intense if the tissue of the ear was pierced or undermined in various directions by a sharp, sterilized needle before the bacteria were introduced, by the method of Biondi (12).

Injection into the anterior chamber of the eye (6 animals). A moderate conjunctivitis occurred in 2 cases, with opacity of the cornea about the puncture, and a moderate accumulation of fibrin and pus in the anterior chamber. All of these evidences of inflammation began to subside on the fourth day, and within two weeks the exudation had largely disappeared. In 4 of the cases, an intense panophthalmitis occurred, with destruction of the eye.

Inoculations into the mucous membranes (6 animals). These were accomplished, in 3 animals, in the trachea by tracheotomy, the mucous membrane being scraped, and the culture rubbed into the abraded surface; in 2 animals, in the mucous membrane beneath the tongue; and in 1 animal, in the vaginal mucous membrane. In none of the animals was there any marked reaction, either local or general.

Pigeons. The inoculations in these animals (17 in number) were made on the mucous membrane of the mouth beneath the tongue, or in the larynx¹ and upper end of the trachea. The operation consisted either

¹ Owing to the conformation of the pigeon's throat, and the great mobility of the larynx, the upper end of the trachea is readily accessible through the mouth.

in scarifying the mucous membrane with a sterilized scalpel or needle, and then firmly rubbing in the culture; or in making a submucous injection of a few drops of the same.

The general effects may be briefly summarized: In 2 animals, there was no effect whatsoever, either local or general. In nearly all of the cases there were moderate redness and swelling about the seat of inoculation, on the second day. This, in 4 cases, was accompanied by a yellowish-white pellicle from 0.5 to 1 mm. in thickness, which did not spread, and consisted of necrotic mucous membrane containing micrococci similar to those injected. In 3 of the cases of tracheal inoculation, in addition to dusky redness and swelling of the mucous membrane, there was a white, dense, stringy, moderately firmly coherent pellicle, over the affected surfaces. This in no case tended to spread, and consisted largely of mucus. About one-half of the animals died, from the second to the sixth day, without dyspnoea or symptoms other than those of progressive feebleness. Of the animals which showed a moderate degree of local and inflammatory reaction, 2 were sick for three or four days, and then completely recovered, while 3 were apparently not sick at all.

We thus find that the reaction of animals to the inoculation of the streptococcus diphtheriae varies a good deal with the species of animal experimented upon. While chickens are, in general, invulnerable, rabbits and pigeons show a marked, though varying, degree of susceptibility. In general, it may be said that young animals are markedly more susceptible to its action than old ones. The general effect is to produce either suppuration or erysipelas, or local necrosis or septicæmia, without marked lesions. Sometimes, one or more of these general effects are associated as the result of the same inoculation.

It is thus evident that the streptococcus diphtheriae, as cultivated from our group of cases of diphtheria, though not inducing in the animal experiments which I have done a disease which can be regarded as diphtheria, is yet, in some animals, markedly pathogenic.

CONTROL CASES.

For the purpose of control, I have made cultures from the scrapings of the throat and especially the tonsils of twenty-five healthy children, living in private houses or in a new and well-aired maternity hospital, and in these I have not found a single colony of the streptococcus.

I further made cultures from the throat and tonsil scrapings of six cases in private practice during illness—two of measles, two of scarlatina, one of follicular tonsillitis, and one of quinsy. In two out of these six cases, large numbers of streptococci identical in every respect with those isolated from our cases of diphtheria were found in enormous numbers. Their effects were tested on animals. The other four cases gave no streptococci. The two cases in which the streptococci were found were

the cases of scarlatina occurring in the same house. This is especially noteworthy, as, within one week of the time of the examination, diphtheria of a severe form developed in both of the children; going on, however, to final recovery, so that no further examinations were made. Thus, out of thirty-one control cases, the streptococcus was found in only two, and these were cases of scarlatina in private practice which shortly developed diphtheria.

CONCLUSIONS FROM EXPERIMENTS.

We are now ready to see what conclusions can be justly drawn from these researches as to the etiology of the cases of diphtheria which we have studied in detail. It is a well-known principle founded upon the modern methods of research, that in the investigation of the etiology of any acute infectious disease we should seek to ascertain first whether there are special forms of bacteria present in the lesions with such uniformity as to justify the conjecture that they may stand in an etiological relation to it. The answer to this question we have found in our cases of diphtheria in the nearly uniform presence in significant situations of a streptococcus. Second, we should seek to isolate in pure forms and to learn by cultivation under varying conditions the life-history of the suspected organism. This has been done in detail in every one of the cases of diphtheria examined. Third, we should, by inoculations of the pure cultures of the suspected organisms into animals, learn whether they are capable of producing disease or not, and especially should we endeavor to induce a form of disease similar to that from whose lesions the organisms were derived. We have found in pursuing the third line of inquiry that, while the suspected bacteria were markedly pathogenic, we have not been able to induce, by their inoculation in animals, a disease which can fairly be regarded as diphtheria.

Let us now see whether the failure to induce diphtheria in animals really means that the streptococcus which we find under such suspicious conditions in the human disease is really of no significance as an etiological factor. In the first place, it is very doubtful whether any of our domestic animals, or any of those which are commonly employed for experimental purposes, are ever spontaneously subject to diphtheria as we know it in man. There is, indeed, a disease common enough in calves, in fowls, in pigeons, and in rabbits, in some parts of the world, which is called diphtheria, and which is associated with the development of a false membrane on the mucous surfaces; but, so far as these have been investigated by the modern methods, it appears that in none of these are the same bacteria found as are present in the human disease; and, moreover, the species of bacteria which are found, and which are presumedly the cause of the disease in animals, differ entirely in the different animals.

Moreover, although there is a considerable number of fairly well

authenticated instances in which the animal diseases from one species or another have been communicated to man with the development of the general symptoms of diphtheria, and a fairly typical local lesion, it may well be questioned whether there is anything more than a general analogy between this disease and genuine human diphtheria; for, after all, as we have seen above, it is the etiological factor which we must ultimately depend upon for the identification of the disease. On the other hand, although many hundreds, perhaps thousands, of attempts have been made to reproduce the human disease in animals by inoculation either of the fresh membranes or cultures, more or less pure, of various microorganisms isolated from them, there does not appear to have been a single case in which an effect was induced which could fairly be absolutely identified with the human disease. We are thus very unwillingly led to face the possibility that animals are not subject artificially, as they appear not to be naturally, to diphtheria as we know it in man.

Now in a disease which is accompanied with a definite and constant lesion, such, for example, as tuberculosis, the problem of the significance of the results of inoculations in animals is much more simple. But in diphtheria, as in typhoid fever and some other diseases whose local lesions are variable and may be absent altogether, we must recognize the possibility that after all we may be forced, by the nature of the case, to do without the light which successful animal inoculations might throw upon the problem of their etiology. In other words, there is a growing probability that there may be acute infectious diseases to which animals are neither naturally nor experimentally subject. If such should prove to be the case, we may find ourselves perforce obliged to rely upon the evidence which the constant occurrence of a definite species of bacteria in a given disease in a large number of cases can furnish, and upon the side light which can be thrown upon the problem by a variety of collateral experimental and clinical observations.

I would not be understood to say definitely that diphtheria, or any other acute infectious disease, cannot be produced artificially in animals. I wish only to call attention to the fact that, so far as the evidence goes, genuine diphtheria as we know it in man has not, in my opinion, up to the present time been thus induced.

Now, we have found in all but two of the twenty-four cases of diphtheria examined a distinctly pathogenic species of bacteria with great uniformity, a species of bacteria which does not, indeed, induce diphtheria in the animals experimented upon, but does induce allied forms of inflammation. Moreover, we have not found in any of the cases the bacilli of Klebs-Loeffler, nor any other to which any significance can justly be attributed.

It may, of course, be said that these streptococci may not actually be the cause of the disease, though so constantly present; that the disease

may be induced by some other unknown agency, some germ, perhaps, which does not grow under the artificial conditions which we supply; and that it is simply the furnishing by the lesion of a favorable growth-medium for the streptococcus which may explain its common occurrence. That all this may be true must be admitted; that it is so it needs facts as yet undiscovered, and to which there is no clew, to make probable. On the whole, it seems to me that, considering the insusceptibility of animals to diphtheria as we know it in man, the result of all of these series of experiments taken together abundantly justifies us in the assumption that in a certain class of cases, at least, diphtheria is caused by a streptococcus having the characters set forth above.

REMARKS ON VARIOUS FEATURES OF THE CASES OF DIPHTHERIA.

As to an explanation of the apparent absence of the streptococcus in two of the cases studied—Nos. XVI. and XXIII.—I have none to offer. It is, of course, possible that they may have been at some time present and died out, but I have found them in the greatest abundance in cases of equal or greater duration of the disease. It is quite possible that by some technical inadvertence I may have failed to find them, although these cases were studied with the same detail and care as were the others. It is, furthermore, possible that, although called diphtheria, in accordance with the views laid down early in this paper, these apparently exceptional cases may have been examples of simple pseudomembranous laryngitis or croup. Indeed, Case No. XXIII. was diagnosed as “croup” by the attending physician, with the distinct specification that there was no clinical evidence of “diphtheria” in the case. The child died from strangulation, the parents having refused operation. But within a few days, in the same house and family, another child was similarly attacked, but with symptoms of marked constitutional disturbance, and shortly died. In this second child (Case XXIV.) the streptococci were found not only in the membrane, but in small numbers in the viscera.

It will be remarked, in the cases of diphtheria in which cultures were made, not only from the local lesions, but from the kidney, liver, and spleen, that, while the streptococci were usually present in the pseudomembranes and in the tissues just beneath it in very large numbers, they were, when found in the viscera at all, only present in very small numbers indeed. They were also usually absent, or present only in very small numbers, in the tracheal and bronchial glands, although these are apt to be red and swollen and their lymph sinuses to contain fibrin. This condition of affairs, taken together with the early and severe symptoms of systemic infection and the lesions of parenchymatous degeneration of the viscera, especially the kidneys, which are apt to occur in diphtheria, would seem to indicate that the systemic changes are probably due to the

absorption of some soluble poison (ptomaine) produced where the streptococci are most actively growing, namely, at the seat of local lesion, or possibly, as will be seen later, in the lungs.

Metastatic septic visceral inflammations were present in none of the cases examined, and are, as is well known, not very common in diphtheria.

In nearly all of the cases of diphtheria in our series the pseudo-membrane was moderately developed or very abundant. In two, however, complicating measles, Nos. XX. and XXI., death occurred so early that in one case there was no pseudo-membrane found, and in the other but two small, isolated fragments.¹

The detailed study of these early fatal cases, both morphologically and by the culture methods which served to identify the species of bacteria present, throw, as it seems to me, a good deal of light upon the manner of local invasion of the disease.

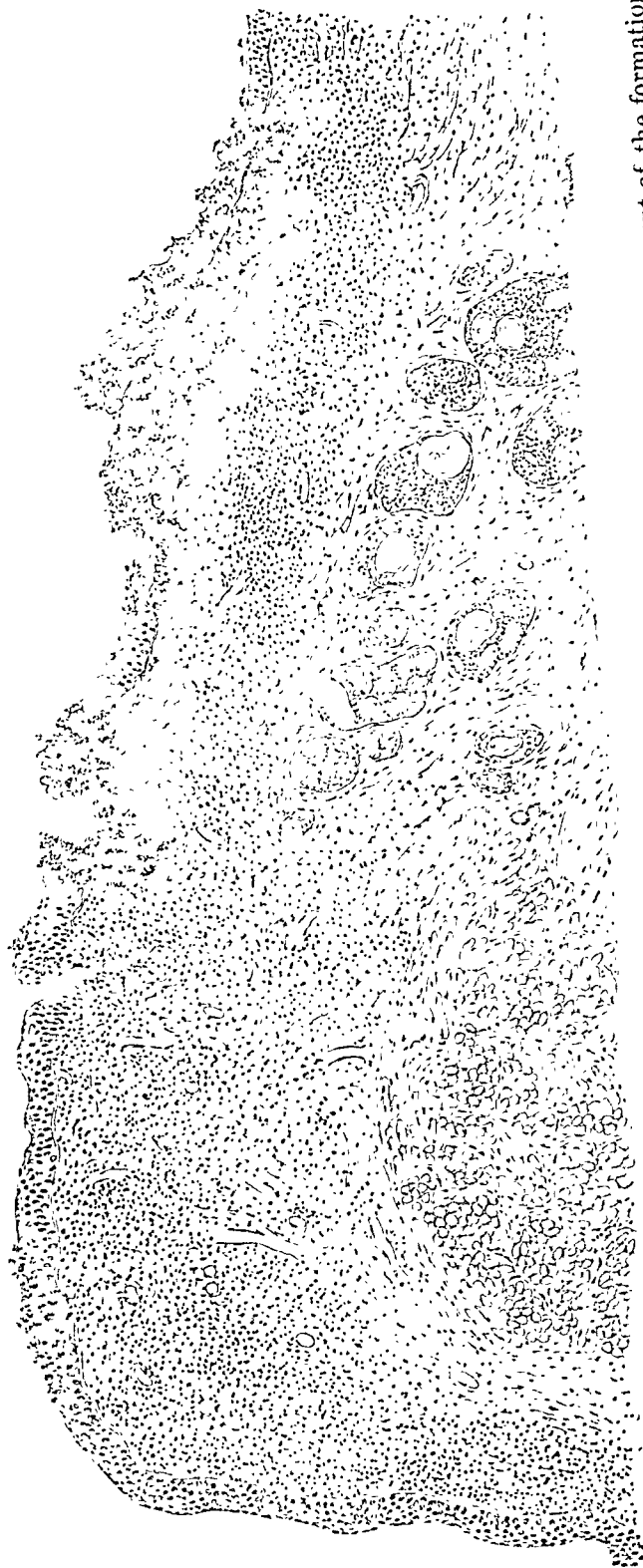
In the case (No. XX.) in which no pseudo-membrane had formed there were the lesions of an intense catarrhal pharyngitis and laryngitis. The bloodvessels were congested, there was an increased amount of mucus on the surface, and the epithelium was in places loosened and proliferating. It was found, both by the microscopical examination and by cultures, that streptococci were scattered sparsely over these inflamed surfaces. In two situations, however, the streptococci were found in considerable masses, namely, in one of the tonsillar crypts and in the ventricle of the larynx. In the tonsil crypts, distinct though small areas of necrosis of the epithelium were found in the immediate vicinity of the bacterial masses. In the ventricle of the larynx no evidence of necrosis was found, but the epithelium was in places detached, and streptococci were found beneath and between them, and in small numbers in the adjacent submucosa.

In Case XXI., on either side of the base of the epiglottis in the pharynx were small white patches, which had the gross appearance of pseudo-membrane. The microscopical examination showed that in these situations there was a considerable heaping up and detachment of the epithelium, with partial necrosis of the cells and of the submucosa beneath, while streptococci and single cocci were scattered and massed among the cells and in the necrotic tissue beneath them. In the same case the small pseudo-membranous patches just below the rima glottidis showed necrosis and partial detachment of the epithelium, which, mingled with granular material and large number of cocci, singly, in pairs, and in chains, formed a well-defined, irregular pellicle. The submucous tissue beneath this pellicle was superficially infiltrated with similar bacteria, and was necrotic (see Plate IV.).

The abdominal viscera in these two cases were not sent to me, so that no bacterial examination was made of them, and so slight were the local

¹ These two cases belonged in a group of five cases of measles with diphtheria sick at about the same time and in the same place. In two of these voluminous pseudo-membranes formed, the duration of the diphtheritic symptoms being longer than in the non-membranous cases, in which death occurred almost at the outset of the disease. These facts, together with the results of the bacterial examination, seem to justify the diagnosis of diphtheria.

PLATE IV.



Longitudinal section of larynx, just below *rima glottidis*, in diphtheria (Case XXI.) showing the commencement of the formation of a pseudo-membrane, and the infiltration of the involved tissues with streptococcus masses.

lesions that it would seem at first as if we were hardly justified in assuming that death was due to diphtheria unless there had been a systemic infection from some source other than the pharynx and larynx. In Case XX., however, although there was but a very slight amount of broncho-pneumonia, the air spaces of the lungs contained enormous numbers of cocci and streptococci. It is quite possible—and Dr. Northrup and I have already made numerous observations which speak strongly in favor of the view—that in cases like these the early death in diphtheria may be due to the absorption from the lungs of a bacterial poison before either a pneumonia has developed or a pseudo-membrane formed.

I have been much impressed in the course of these studies with the disproportion which often exists between the amount and the extent of the pseudo-membrane, particularly of the larynx and trachea, and the actual involvement of the underlying mucous membrane. There are, I think, always to be found some regions where the pseudo-membrane is closely attached to and is formed in part by the epithelium and the superficial layers of the submucosa; but in almost all cases the pseudo-membrane spreads away over areas of mucosa where the epithelium is quite intact, and its underlying tissue, save, perhaps, for congestion and œdema, is perfectly unchanged. Very often I have found a closely adherent pseudo-membrane extending from the tip of the epiglottis down over the vocal cords, or simply about the cords themselves, which was made up in large part of the superficial layers of the mucosa; while below the vocal cords a more voluminous and largely fibrinous false membrane extending through the trachea and even into the small bronchi left the mucous membranes of these tubes virtually intact. It would seem that a comparatively small area of actual involvement of the mucous membrane can, in the larynx and trachea at least, furnish the material for a fibrinous pellicle of great extent. In the pharynx, however, the extent of the pseudo-membrane is much more nearly coincident, in my experience, with the involvement of the mucous membrane, than in the larynx and trachea. This condition may serve, partly at least, to account for the disproportion which is so often observed between the apparent extent of the local lesions and the systemic infection, and may in part explain the absence of the symptoms of general infection in some cases which, on clinical grounds, has appeared for so long to justify the separation of croupous laryngitis from diphtheria.

EXAMINATIONS OF CHILDREN EXPOSED TO DIPHTHERIA.

As we are not able to confirm by the successful induction of typical diphtheria in animals, the conclusions to which we are led by our morphological and biological studies on diphtheria, it seems highly important to draw all the data possible from a careful study of the conditions under which children are placed in hospitals or elsewhere where diphtheria is

prevalent among them, since valuable evidence, confirmatory or otherwise, might, it seems, be arrived at in this way. With this end in view, I have made a series of studies on children not the victims of the disease, but associated with those who were suffering from it in the hospital in which it was frequently occurring and from which most of our cases were taken.

In the first place, with the concurrence of Dr. Northrup, I examined, by the culture methods, scrapings from the tonsils of 25 children both well and ill. In 17 of these cases no streptococci were found. In 8 of the cases the streptococci were found in small numbers. All of these 8 positive cases had been for some time in the hospital and in rooms in which diphtheria was liable to occur. One of these cases in which the streptococcus was found had been in the room with the mother, who was the victim of puerperal fever. This child died soon afterward from a severe umbilical phlegmon, and from the inflamed tissues large numbers of similar streptococci were cultivated. Two of the cases were suffering from measles. They were quarantined at about the time the examinations were made, and soon after developed diphtheria from which they died. Another of the positive cases, convalescing from broncho-pneumonia was confined in a small room with twelve inmates. Two other of the positive cases had been for a considerable period in a large room with many inmates, and *from the dust of this room the streptococcus was cultivated.*

In a second series of examinations cultures were made from the tonsils of children which had been for varying periods in the same hospital, and had died of various diseases not diphtheria. There were in this class fifteen cases; twelve of these were cases of marasmus with more or less broncho-pneumonia or entero-colitis; one was a case of pertussis with extensive interstitial emphysema; one, which had been for a long time in the hospital, died with symptoms of suffocation, the autopsy revealing only œdema of the lungs; the other was a case of erysipelas following vaccination and extending over the entire arm and chest. Of the 12 marasmus cases, 7 showed no streptococci; in 4 the streptococci were found in small numbers, but only in deep scrapings from the tonsillar crypts and folds. These 4 cases in which the streptococcus was found had all been for considerable periods in the hospital; they were all confined in rooms in which at the time diphtheria was occasionally originating. One of these had been for several days in a room with a number of eczema cases, another in the "eye-room" with a number of cases of purulent conjunctivitis. Of the 3 remaining cases, the one with pertussis showed no streptococci; the one with pulmonary œdema and the one with erysipelas showed a few. We thus see that from scrapings, mostly from the tonsillar crypts or the folds of mucous membrane about them in 15 children dead of various diseases not diphtheria, in a large

children's asylum in which diphtheria was constantly occurring, the streptococcus was found in 6.

If now we summarize the results of the cultures of scrapings from both the dead and living children in this institution in which diphtheria was prevalent, we find that in 12 cases out of 40 small numbers of streptococci were present in and about the tonsils of children not at the time suffering from diphtheria. In 2 of these, fatal diphtheria shortly developed. The comparison of this result with that of similar cultures from the tonsils and throats of well and sick children outside of this hospital and mostly in private practice given above is striking. For in these, from scrapings from 31 cases, the streptococcus was cultivated in only 2 which were suffering from scarlatina at the time, and which both developed diphtheria shortly after. The significance of these collateral observations is, I think, evident and needs no comment.

It should be said that the identity of the streptococci isolated from these control cases with those found in diphtheria was established, not only by their morphological and biological characters, but by the results of their inoculation in animals, the details of which it is not necessary to enter into here. The only difference which I observed between the streptococci from the control cases and those from diphtheritic membranes was that, in general, the former were, for the most part, a little slower in their growth, and their effects upon animals a little less pronounced. They produced, in a large proportion of the inoculations, either erysipelas, inflammation in the ear of rabbits, or small abscesses; but the abscesses were invariably small, and the inflammatory reaction short-lived.

THE RELATIONSHIP OF THE STREPTOCOCCUS DIPHTHERIÆ TO OTHER SPECIES OF BACTERIA.

We have now arrived, by an independent series of observations on a group of cases of diphtheria, at a definite and precise notion of the species of bacteria which appears to stand in a causative relation to the disease. If we compare this species, which we have called the streptococcus diphtheriæ, with those species of bacteria already known and fully described, we find that, in its forms and in its modes of growth, as well as in its effects when injected beneath the skin or into the blood of animals, it appears to be identical with two well-known species, called streptococcus pyogenes and streptococcus erysipelatos. I have carried the cultures of streptococci from cases of diphtheria along side by side with cultures of streptococci made from various cases of simple acute erysipelas and simple phlegmonous inflammation, week after week; over and over again, I have stained, measured, and compared the growth from these three sets of sources. I have repeatedly inoculated duplicate sets of animals with the different cultures, and I have never found a single appreciable constant feature of difference between them. There are, it is true, often differences in rapidity

and vigor of growth on artificial culture media, as well as differences of virulence, as the result of inoculation of animals, between cultures derived from the different sources. But these differences are no more marked between cultures from erysipelas, phlegmon, and diphtheria than those often observed between cultures derived from different cases of the same disease.

While it is not possible, with our present knowledge, to characterize precisely the difference in action, upon the animal tissues, of the streptococcus pyogenes and the staphylococcus pyogenes, associated, as they so often are, in the phlegmonous inflammations; in general, the streptococcus appears to be more prone to cause the spreading, progressive form of inflammation, and to give rise to general infection, than is the staphylococcus, the more marked tendency of which is to give rise to localized suppurative inflammations, abscesses, etc. Both forms of bacteria may, indeed, induce suppuration and abscess, and both may cause more or less widely spreading phlegmonous inflammation; but the special tendency of each appears to be that which I have stated.

It is worthy of note, in this connection, how often the streptococcus has been found associated, apparently as the etiological factor, with those inflammations, particularly of the serous membranes, in which the formation of fibrin is a most marked feature.

To enter here into the story of the discussions as to the identity of the streptococcus of erysipelas and the streptococcus pyogenes would lead us far afield, and bring us at last to no very definite result. The fact is, that nearly every practical worker in bacteriology, who concerns himself with these particular species, appears to find himself forced by his observations to the conclusion that, in their morphological and biological, and, for the most part, in their pathogenic, characters, so far as animals are concerned, the streptococcus pyogenes and streptococcus erysipelatos are practically identical. Nearly every one, however, hesitates to declare absolutely their identity, not on the ground of morphological or biological or experimental discrepancies, but rather because clinical experience and observation have for so long sanctioned the belief that erysipelas and simple phlegmonous inflammation are distinct and separate diseases. The close relationship existing between these three forms of inflammation has long been the subject of observation and speculation, and the probable unity of the causative bacterial agent has been set forth with much interesting detail and critical acumen by Baumgarten (14), as well as hinted at by others.

THE RELATIONSHIP OF DIPHTHERIA TO ERYSIPELAS AND PHLEGMONOUS INFLAMMATION.

Whether the clinical differences between erysipelas and those forms of suppuration in which the streptococcus pyogenes occurs cannot be explained—perhaps, by the mode or seat of invasion, by variation in viru-

lence or the resisting capacity in the individual, or in some other way—are questions which further observations must answer. That a simple erysipelatous and a phlegmonous or suppurative inflammation very frequently merge into one another is well enough known to all. That different effects should be produced by the same species of bacteria growing in the lymph spaces of the skin, or in the depth of other forms of tissue, or on the mucous membranes or wound surfaces, is by no means incomprehensible, and is not without abundant analogies in the life-history of other organisms. What the exact bearing of these differing conditions under which the bacteria grow, and what their relations may be to the symptoms and lesions, are matters for further investigation. But it is, after all, the pseudo-membrane—a structure either fibrinous or necrotic, or both, in its nature, and the seat of its most frequent occurrence, namely, the upper air-passages—which especially characterizes diphtheria in its common phases. Now, given a bacterium, like the streptococcus, capable of inducing a marked irritation and necrosis in the tissues, and set it growing in such enormous numbers as are seen in many cases of diphtheria on a mucous membrane, or on the granulation tissue of a healing wound, where the smaller bloodvessels are abundant and close at hand, and the conditions are abundantly fulfilled for the induction of emigration of leucocytes, formation of fibrin, and localized necrosis of the involved tissues—the conditions, in other words, for the development of a necro-inflammatory pellicle over the affected surfaces. At any rate, the position into which we are led by these studies is simply this: There seems to be experimental ground for the belief that some forms, at least, of diphtheria and erysipelas, and some forms of phlegmonous inflammation, are phases of the inflammatory process having one, at least, of their prominent etiological factors in common, namely, the inciting species of bacteria.

It should be remembered that to admit this is by no means to identify these diseases: no important clinical tradition is thereby overthrown. The different phases of inflammation become, it is true, by this conception of them more intimately related to one another. But, on the other hand, those factors which determine that infection with the one form of germ shall induce now a diphtheritic, now a phlegmonous, and now an erysipelatous inflammation, become, from this point of view, of even greater importance than before.

However iconoclastic this view may seem to those who have been accustomed to regard these phases of inflammation as entirely distinct, there seems to be a large amount of evidence other than that derived from experiment which favors the view to which these studies, somewhat unwillingly it must be confessed, have led the writer. In the first place, every practising physician knows how frequently suppuration occurs as a local complication of the diphtheritic process. The occasional simul-

taneous occurrence of severe umbilical phlegmon with pharyngeal and laryngeal diphtheria in the same child is not without significance in this connection, especially in view of the identification, in two of the cases noted above, of the same species of streptococcus, both in the suppurating tissues about the umbilicus and in the pseudo-membrane in the air-passages.

The occurrence of a diphtheritic inflammation of the mucous membrane of the uterus, which occasionally forms one of the manifestations of puerperal fever, in connection with which the streptococcus pyogenes has so often been demonstrated, is also a significant fact.

The reputation of diphtheria as a sewage and filth disease is much more comprehensible than before when once we recognize the close relationship which seems to exist between at least some of its forms and the suppurative diseases. If the bacteria which act as the inciting cause of diphtheritic inflammation be forms peculiar to this disease alone, it is rather difficult to account for the occurrence of sporadic cases of diphtheria in which there is no evidence of direct communication of the disease from one individual to another. But if we admit the causal relationship between the streptococcus of suppuration or erysipelas, and some cases of diphtheria, nothing could be more evident, because the discharges from all sorts of suppurating wounds and surfaces form a very common and important bacterial element, not only in sewage, but in the air of our crowded dwellings and hospitals. But we need not go with more detail into these general considerations, which the experiences of every practising physician will enable him richly to supplement.

It should, however, be always borne in mind that in most of the acute infectious diseases as we see them in man, while the bacteria serve as the inciting cause, without which the particular form of disease could not, as we believe, exist, there are other and most important contributory factors which can by no means be ignored, and which are daily assuming a greater and greater importance. These contributory factors to the occurrence of an acute infectious disease are often those to which the attention of the practitioner has been more especially directed in his observations on these diseases, and, consequently, are often regarded by him as the etiological factors themselves. Thus it was that at the announcement by Koch, in 1882, that the bacillus tuberculosis was the etiological factor in tubercular inflammation, many whose attention had been prominently directed toward the important influence of hereditary predisposition, were disposed to doubt, on this ground alone, the importance of the bacillus in causing the disease. A similar condition of affairs has been revealed in acute lobar pneumonia. The importance of exposure to cold and wet, injury, etc., in inducing the disease is just as evident now as ever it was, only we are now aware that the exposure, etc., appear to be but predisposing factors, which explain why in one case an individual

may harbor in his saliva or elsewhere the bacterium of pneumonia without experiencing the slightest evil, while in another, exposure or other deleterious agencies rendering the conditions favorable for the development of the germ, an acute lobar pneumonia may ensue.

The important relationship between measles and diphtheria, and between scarlatina and diphtheria, appears in the light of these studies but another illustration of the same conditions. The universally recognized danger in both measles and scarlatina, namely, that diphtheria may occur as a complication, is amply illustrated by the history of epidemics of both measles and scarlatina in any of our large children's hospitals. That tissues which are ordinarily invulnerable to the growth and action of pathogenic bacteria may become very susceptible to their presence by a slight chemical change in the material present, is shown by the recent striking experiments of Bujwid (15), who found that the introduction of a small amount of solution of grape sugar into tissues which did not usually react at all in the presence of the *staphylococcus pyogenes aureus* would lead them to do so readily with the production of abscess. That some such slight change in the exudation of the mucous membrane of the air-passages as occurs in the catarrhal inflammation of scarlatina and measles might favor the growth of bacteria which had lain dormant and harmless in the tonsillar crypts or elsewhere in health, seems, in the light of these studies, a justifiable hypothesis. With the concurrence of Dr. Northrup, I have endeavored to ascertain whether any change in the reaction of the fluids of the mouth and throat occurred at the advent of measles and scarlatina which would render them more favorable for the growth of the streptococcus; but our studies in this direction have thus far led to no tangible results.

It should be distinctly understood that these studies on the etiology of diphtheria and the conclusions derived from them apply only to a certain set of cases. It by no means follows that because this particular group of cases of diphtheria is caused by a streptococcus, and seems to be intimately related in etiology to some other common phases of inflammation, that all cases of diphtheria are induced by the same organism or are related in the same way to erysipelas and phlegmon.

That other organisms than the streptococcus here described may induce that set of symptoms and lesions to which we give the name diphtheria, we must, of course, admit, and this the more readily on account of the great variability of both symptoms and lesions in even well-marked groups of cases. So far as Loeffler's experiments go, they tend to indicate that some other forms of bacteria really may play a part in the induction of certain forms of the disease. But it is not without significance that Loeffler also found a streptococcus very similar to that which I have found in our cases, not only in connection with his bacillus, but in several cases in which the bacillus was absent.

The statement of Loeffler, that the cases in which the streptococcus was present were apt to be those in which the pseudo-membrane was not greatly developed, and in which the necrotic character of the inflammation prevailed, certainly does not apply to the cases which I have studied; for in more than one-half of my cases the pseudo-membrane was both voluminous and extensive.

The fact that Klebs, Heubner and Bahrdt, Babes, Emmerich, Oertel, Baumgarten (16), and many others have been led on either morphological or biological grounds to attribute much significance to a streptococcus in causing diphtheria should be placed in evidence here.

If the streptococcus which we find so constantly in diphtheria be specifically identical with the streptococcus of phlegmonous inflammation and of erysipelas, the propriety of giving it a special name might well be called in question from the point of view of scientific nomenclature. But when we consider that bacteriology is still in its earliest infancy, and that both its classifications and nomenclature are only tentative and temporary, pending a greater accumulation of facts, such a special name without prejudice to future revision may serve for use until the whole bearings of the subject are better defined.

THE EFFECTS OF DRYING ON THE STREPTOCOCCUS DIPHTHERIÆ.

In view of the fact that diphtheria may be communicated by portions of the inflammatory exudate containing the streptococci, it seemed desirable to learn how long the germ could resist the deleterious effects of drying, such as would occur should portions of the exudate become distributed about rooms or upon fabrics.

The first set of experiments was made upon pure cultures of the streptococcus. Fresh and actively growing beef-tea cultures from three to five days old were prepared, and, after being thoroughly shaken so as to distribute the bacteria uniformly through them, sterilized bits of silk thread, pieces of flannel, etc., were soaked in them for a few moments and then dried in sterilized flasks and tubes. These fragments of thread and fabric were now planted from time to time in order to see whether the bacteria had been killed or not by the drying. This set of experiments was done with cultures from five of the diphtheria cases.

I have not sought to obtain numerical results in these experiments because I soon found that the streptococci from the different cases varied a good deal in their capacity to remain alive in the dried condition. In general, it may be said that a considerable number of the germs are killed by drying, but in all of the experiments a very large number were not killed. Thus I have at intervals from eight to ten days replanted the dried germs, and, up to eighty-five days, the longest period to which I have carried the experiment, large numbers grew most

vigorously from the dried cultures. I have inoculated rabbits with the offspring of these dried germs and found them extremely virulent, inducing marked and violent erysipelatous inflammation. I have found, however, that the streptococci from some of the cases, while resisting the drying very well, and retaining the power when replanted of growing vigorously, had, nevertheless, become much less resistant to the action of the germicidal fluids than they were before drying.

But, as it might be objected that the results of drying the pure cultures would not necessarily be the same as the drying of the streptococci in the membranes themselves, as might happen in practice, I have dried fragments of the fresh membranes from a number of the cases on the smooth walls of tubes and flasks. These dried bits of membrane I have scraped off from time to time, and in every case up to fifty-four days, the longest period to which any experiment was carried, large numbers of streptococci grew vigorously, together with some other forms of bacteria.

Thus we find, as the result of these drying experiments, that the streptococcus diphtheriæ when dried on smooth surfaces or fabrics, either in the form of pure cultures or in the crude pseudo-membranes, may retain its vitality and virulence for long periods.

EFFECTS OF FREEZING ON THE STREPTOCOCCUS DIPHTHERIÆ.

As the possibility has been suggested that the exposure of infected rooms and their contents to the cold in winter might accomplish the destruction of the contagion of diphtheria, I have exposed, to a temperature below freezing, the streptococci from several of the cases of diphtheria placed on fabrics. The germs in one of the sets of experiments were dry; in another were thoroughly wet. The exposure to a temperature of -10° C. (14° F.) for seventeen hours did not destroy the vitality of any considerable proportion of the germs.

Exposure of the pseudo-membrane from two of the cases of diphtheria, both in the wet and dry conditions, to the same temperature for the same period, showed that under these conditions also the germs may resist an extreme degree of cold.

The conditions under which steam sterilization is effective have been so frequently and so fully worked out that the effects of high temperature upon the streptococcus diphtheriæ were not studied.

THE EFFECTS OF GERMICIDES ON THE STREPTOCOCCUS DIPHTHERIÆ.

Sulphurous acid. Although the vapor of burning sulphur has been repeatedly shown to be of but very moderate value as a germicide, the fact that it is still so generally relied upon in this country, especially for the disinfection of rooms, has led me to carry out a series of experiments on its effects upon the streptococcus diphtheriæ.

In these experiments, I have used a glass bell-jar, of about one gallon capacity, into which the objects to be treated were lowered by means of fine platinum wires through an opening in the top. The articles were placed in little metallic baskets, which were carefully sterilized before each experiment. The sulphur was burned in a small dish at the bottom of the receiver, and the whole apparatus was tightly sealed, top and bottom, at each operation. The receiver, in all cases, remained closed for twenty-four hours, and, when opened, the contained air was invariably still strongly charged with the vapor. It is evident that the conditions under which the experiments were done with this apparatus were much more favorable for the action of the sulphurous acid than in the disinfection as it is usually practised in larger chambers which are rarely, if ever, perfectly tight.

I first tried the power of the sulphur vapor to kill the streptococcus in pure cultures, in a perfectly dry condition, in the interstices of threads and fabrics. Cultures from several of the cases of diphtheria were thus exposed to the vapor. I have never been able to kill more than a small proportion of the bacteria in this way when they were taken from fresh, vigorous cultures. If the bacteria had been dried for a long time, so that they were in a feeble and vulnerable condition, it was found, in a few cases, that all had been destroyed by the vapor.

Another set of experiments was done, similar to those above described, save that the fabrics on which the streptococcus was previously dried were moistened just before the sulphur was burned in the receiver. This moistening, in one set of cases, was done by the direct application to the fabrics of sterilized distilled water; in another, by conveying condensed steam into the receiver, just before the sulphur was burned, until the water began to collect and run down the walls. Under these conditions, all the streptococci were killed within twenty-four hours.

A similar set of experiments on the action of sulphur vapor was made with the dried pseudo-membrane from cases of diphtheria. In these, I found that, whether dry or previously moistened, I could, in no case, succeed in killing all the streptococci by a twenty-four hours' exposure to the vapor. The difference of the action of the vapor on the pure cultures and on the streptococci enclosed in the pseudo-membrane is obviously due to the circumstance that, in the pure culture, there is direct contact between the acid and the germs, while in the membrane there is not.

We thus see that, while the moist sulphur vapor is more efficient than the dry in destroying the streptococcus diphtheriæ, in either form it is entirely inefficient for the purposes of practical disinfection.

Carbolic acid. In determining the germicidal power of this agent for the streptococcus diphtheriæ, a different mode of experimentation was adopted. A measured volume of actively growing beef-tea culture was

intimately mixed, in sterilized tubes, with an equal volume of a freshly prepared aqueous solution of the acid. This, of course, would give the effect of a solution of one-half the strength of the carbolic solution employed, because it was diluted one-half by the fluid culture. In this way varying strengths of the acid were tested. As the length of exposure to the germicide is a most important factor in such tests, small portions of the mixture were removed from the tube, and instantly planted in gelatine, at the following intervals: $\frac{1}{2}$, 3, 5, 10, 15 minutes. Approximately equal amounts were removed each time, by the use of a fine platinum wire loop. The portions removed were planted in gelatine tubes, by the Esmarch "roll" method, and in this way the number of colonies which appeared after from 3 to 5 days could readily be counted, and represented, of course, the number of germs which had survived the action of the germicide. In each case, a control-plant was made from the original culture, so that the number of germs destroyed could be approximately determined. Of course, absolute accuracy in determining the number of germs destroyed was neither sought for nor desired, but only such data as would indicate, in a general way, the efficiency of the germicide. I do not deem it necessary to reproduce here the numerical tables which embody the results of these experiments; I shall simply summarize the results. Cultures from several of the diphtheria cases were used, and the experiments repeated for control.

In $\frac{1}{2}$ per cent. solution of carbolic acid, the bacteria were slowly killed; but at the end of 15 minutes, about $\frac{1}{6}$ of the original number remained alive. In 1 per cent. solution, a large proportion were killed within 1 minute, and, after 3 minutes' exposure, none remained alive. In 2 per cent. solution, a total destruction occurred within 1 minute.

That it would be most unsafe to base rules for practical disinfection, however, upon the power of carbolic acid to kill the streptococcus diphtheriæ in pure cultures is shown by the following experiments on fresh pseudo-membranes. Small fragments, about 4 mm. square and 1 mm. thick, were put in 1 per cent. carbolic solution. Some of these were removed at the end of fifteen minutes, and planted; large numbers of streptococci grew, together with other forms. At the end of thirty minutes, plants showed that still a considerable number had remained alive. At the end of forty-five minutes all were dead. A similar series of experiments, with 2½ per cent. carbolic acid, showed that within fifteen minutes all of the streptococci were killed. In much more dilute solutions of carbolic acid (1 : 4000), soaking of the pseudo-membrane for an hour and a quarter had no appreciable effect upon the vitality of the streptococcus.

We thus see that carbolic acid, in order to be of practical efficiency in destroying the streptococcus diphtheriæ, must be used in at least 2 per cent. solutions, and that its action must be prolonged.

Creolin. The experiments on the effect of this agent were made because of its highly lauded germicidal power, and because it has been claimed by many to be less harmful in its effects upon the organism than is carbolic acid, which in many respects it resembles. The preparation used was Merck's, and it forms with water in the strengths employed a milky, tarry-smelling fluid. The mode of experimentation was the same as with carbolic acid.

In solutions of 1:1000, about $\frac{1}{20}$ of the streptococci remained alive at the end of 15 minutes. In solutions of 1:500, a considerable number remained alive at the end of 15 minutes. In 1:200 solutions, all were destroyed at the end of 15 minutes. In 1 per cent. solutions, all were dead at the end of 3 minutes. Thus, creolin in solutions of equal strength, appears to be a little more efficient in killing the streptococcus diphtheriæ than is carbolic acid.

Bichloride of mercury. The experiments with this agent were similar in character to those with carbolic acid and creolin.

In solutions of 1:5000, from $\frac{1}{6}$ to $\frac{1}{10}$ of the germs introduced as pure cultures remained alive up to the end of 1 minute. At the end of 3 minutes all were dead. In solutions of 1:2000, as well as 1:1000, complete destruction had occurred at the end of $\frac{1}{2}$ of a minute.

With the streptococci embedded in, and partially protected by, the pseudo-membranes, however, the effects are markedly different. Bits of pseudo-membrane, like those used in the carbolic acid experiments above, were soaked in solutions of varying strengths, with the following results: In 1:10,000, for 1 hour and 10 minutes streptococci grew in large numbers. In 1:5000, after 15 minutes a few grew; other fragments removed after 30, 45, and 80 minutes showed no growth. In 1:1000, after 15 minutes' soaking of the membrane a few streptococci grew. After this period, at intervals of 30, 45, and 80 minutes there was no growth.

We thus see that a fragment of diphtheritic pseudo-membrane must be soaked for from 15 to 30 minutes, in solutions of sublimate as strong as 1:1000, to accomplish a destruction of the streptococcus which in pure cultures, where there is perfect contact, may be achieved in half a minute.

I regard the numerical results of these experiments with germicides as of very little importance, save as giving general indications as to the absolute and relative power of killing the streptococcus, because, as already stated, of the great variability in the vigor of the germ from different cases and under a variety of conditions.

In the disinfection of objects, both the strength of the germicide and the length of exposure should be carried with large allowance beyond the point which such experiments may indicate as efficient. In the use

of germicides in treatment, on the other hand, the limit will be usually sharply defined by the tolerance of the body to their poisonous effects.

SUMMARY.

We have found, by a critical examination of the studies which have heretofore been made on diphtheria by the use of the modern methods of research, that no definite species of bacteria has been discovered which could fairly be positively regarded as the cause of the disease.

We have studied in detail, both by morphological and biological methods, twenty-four cases of diphtheria in young children, most of them occurring in hospitals, in which the affection has assumed the character of an epidemic, the disease either occurring by itself or in connection with suppurative diseases, or scarlatina, or measles. In all but two of these twenty-four cases, we have demonstrated the presence of a streptococcus, usually in large numbers in the local lesions, and in small numbers, in a few of the cases, in the viscera.

We have established, by the biological methods, the specific characters of this streptococcus, and by animal inoculations in rabbits and pigeons have found that it is markedly pathogenic, inducing erysipelatous or phlegmonous inflammation, abscess, and localized necrosis. We have not succeeded in inducing on the mucous membrane of animals any lesions which could fairly be regarded as similar to the local lesions of diphtheria, as these are ordinarily developed in man. We have found, however, that diphtheria as we see it in man, does not apparently occur spontaneously in animals, and has not been induced experimentally by any of the numerous and variously modified inoculations thus far practised.

We have in control examinations of mouth and tonsil scrapings from thirty-one healthy and sick children, not apparently exposed to diphtheria; never found the streptococcus, except in two cases of scarlatina in which diphtheria soon after developed. On the other hand, in examining throat and tonsil scrapings from forty children exposed to the disease in a hospital in which it was epidemic, we have found the streptococcus in twelve of them. In two of these, fatal diphtheria soon followed. Once we have found it floating in the dust of the room in which the disease had originated. We have seen that all of these observations, taken together, seem to lead us to so strong a presumption that the streptococcus is the causative factor, in this group of cases, at least, of diphtheria, that it practically amounts to a demonstration.

We have found reason for believing on biological and experimental grounds that the streptococcus occurring so constantly in these cases of diphtheria is probably identical with the streptococcus pyogenes and streptococcus erysipelatos. It has been shown that the apparent identity

of the inciting species of bacteria in erysipelas, in some forms of phlegmonous inflammation and in at least certain groups of cases of diphtheria is not only not inconsistent with our knowledge of the pathology and symptoms of these three forms of inflammation, but serves to account for various facts concerning the nature and spread of diphtheria which have hitherto seemed obscure.

We have found that the crypts of the tonsils form a favorite nesting-place for the streptococcus and that it may lie harmlessly there even in considerable numbers, unless some lesion of the mucous membrane provides conditions suitable for its growth, when it may enter upon a career of active and, as it would seem, fateful proliferation.

In the presence of the streptococcus in large numbers in the local lesions of diphtheria and in its absence in any considerable number as a rule in the internal organs, we find ground for the belief that the symptoms of systemic infection are probably in large measure due to the absorption of a soluble poison produced by the bacteria at the seat of their most active proliferation.

We have demonstrated that the streptococcus of diphtheria is not readily destroyed by drying, but both in the form of pure cultures on threads and fabrics and in the pseudo-membrane itself may retain its vitality for long periods when dried in the air. We have tested its vulnerability when brought in contact with some of the commonly used antiseptic agents and found first that the vapor of burning sulphur is very inefficient and unreliable in destroying the germs. We have found that carbolic acid and creolin in considerable strength destroy the streptococci but in dilute solutions are inefficient; while sublimate even in very dilute solutions heads the list in its killing power. But we have also found, as was to be expected, that all of these germicides are much less efficient when applied to the bacteria which lie embedded in the pseudo-membranes and the tissues, than when they are free in the pure cultures.

PROPHYLAXIS.

Having now accumulated a certain amount of definite knowledge about the germ which appears to be capable of inducing diphtheria, let us see how this knowledge may be applied in the prevention and in the treatment of the disease.

It is a well-established fact, to which the personal experiences of many a practising physician can bear witness, that diphtheria may be directly communicated from one individual to another by means of portions of the fresh pseudo-membrane. With this mode of transmission we have nothing to do. That it may be communicated in some less tangible way, either during the illness or long after, in garments, bedding, furniture, the walls of rooms, etc., is equally well established. But in the latter

mode of infection our lack of knowledge about the nature of the disease germ has made it impossible for us to understand in detail its exact mode of transmission. In the light of these studies, however, this would seem to be tolerably plain.

We have seen that, in a certain group of cases at least, diphtheria may be caused by a streptococcus; that this streptococcus may retain its vitality for long periods when dried in fragments of the pseudo-membranes or in mucus. Now this dried material when detached and broken up forms a part of the dust of the room in which it is set free, and like other dust may be inhaled. Exposed again to moisture, warmth, and such food as the mouth and respiratory passages abundantly furnish, the germs, as our experiments have shown, may revive and grow. Wherever then a particle of diphtheritic exudate dries on walls or garments or elsewhere we have apparently a possible source of infection—the conditions of its dissemination being those which equally control the spread of non-infectious dust. That drying destroys a certain proportion of the germs which a diphtheritic pseudo-membrane contains is shown by our experiments. How long a part of them may remain alive we do not know; but it appears from the experiments that the vitality as well as the virulence of the streptococci varies a good deal in different cases. That the germs cannot detach themselves from moist surfaces, such as the mucous membranes, and carry contagion through the expired air has been established by experiments on other infectious diseases.

We thus see that, save for those liable to come in contact with fresh diphtheritic exudates, the danger of infection seems largely to limit itself to exposure to dust and dirt of which the dried exudate forms a part. There seems to be every reason for believing that in the hospital from which most of our cases came, the dust infection was the common mode.¹

This condition of affairs but emphasizes the probability that in the crusade against fifth and filth diseases, the devotees of cleanliness and prophylactic medicine will find in the immediate future a wide and widening field of labor in impressing upon the public the dangers of infectious dust in overcrowded houses and hospitals and filthy city streets and showing them the ways in which its evils may be avoided.

Already it has been shown that one of the most active sources of contagion in tuberculosis is the dust of rooms in which without due cleanliness consumptive individuals have lived. Antiseptic surgery has adopted such practical procedures as imply the belief that all dust-containing air may be infectious so far as wound diseases are concerned. There is much reason for believing that the pneumococcus is disseminated in the same way.

¹ As to the relationship of erysipelas and phlegmonous inflammation to diphtheria, as affording a source of infection, we need not dwell upon it here since the same conditions would seem to apply as in the transmission of the contagion from one case of diphtheria directly to another.

House disinfection. Having thus brought together the facts bearing upon the mode of communication of diphtheria which these studies embody, the practical deductions as to general sanitary precautions against the spread of the disease are comparatively simple. The immediate destruction so far as possible of all the inflammatory exudates which may be discharged is of primary importance. These should be received at once so far as possible into vessels containing 5 per cent. solution of carbolic acid, where they should remain for at least an hour before being thrown into the sewer. The removal of dust settled about the room which may contain particles of the exudate not destroyed—by means of moist cloths, and never by that barbaric survival, the feather duster—and the efficient disinfection of clothing and rooms liable to contamination; these seem to be the other main points.

It is a great pity that in the matter of disinfection of rooms we should in this region still be going through with the inefficient mummerly of burning sulphur with closed doors under the impression that it will destroy contagion. This operation has, indeed, a certain archaic picturesqueness about it, and save for the damage which is liable to accrue from the fading of furniture and hangings, is a tolerably harmless practice; but it savors rather of the propitiatory sacrifices to malevolent deities of centuries gone by than of the intelligence of the present time. Sulphurous acid, as it is usually applied in house disinfection, has been shown over and over again by the most careful experiments to be a very inefficient and unreliable disinfecting agent. It may be better than nothing, but in disinfectants—which are often our sole weapons in fighting epidemics—the best is none too good. The efficiency of sulphurous acid may be increased by securing the thorough wetting of everything to be disinfected, but even then it is not great.

As to the details of a mode of room disinfection upon which we may rely, I think it may not be out of place here to formulate a set of directions which largely embody, and are in part a transcript of the official regulations for disinfection as required by the health authorities in Berlin in 1887.

All bed-linen, clothing, handkerchiefs, etc., which are to be washed, and all cloths which have been used for dusting the room, should be placed for at least twenty-four hours in 2 per cent. solution of carbolic acid, then boiled for an hour in water, and then washed with strong soapsuds.

The disinfection of the room and its contents at the close of the illness will be the more easy, and certainly efficient, the greater the care which has been exercised in removing all unnecessary articles of furniture, hangings, pictures, etc., from it at the commencement of the disease.

In the first place, all clothing which cannot be washed, bedding, mattresses, pillows, etc., carpets, cushions, and all such furniture as has not

exposed wooden frames, should be tied up in cloths (sheets) which are saturated with 2 per cent. carbolic solution, and sent away to be steamed at the public disinfecting station.¹

All valueless articles of furniture or clothing should be burned—best at the disinfecting station—but in case of necessity the smaller articles may be disposed of in the house furnace or range at such time as cooking is not going on.

Polished articles of furniture, picture-frames, metallic articles, etc., should be firmly rubbed off on all their surfaces with dry cloths, or, when permissible, with cloths wet with 5 per cent. carbolic acid. The cloths used should be immediately burned or put into 2 per cent. carbolic solution.

If the walls of the room are hard-finished or painted, they, together with all doors, windows, and woodwork, should be thoroughly washed, as should finally the floor, with 5 per cent. carbolic solution. If the room have papered or frescoed walls, the floors should be thoroughly flushed with 5 per cent. carbolic solution, and then all the walls should be thoroughly and firmly rubbed down in every part with lumps of bread, the crumbs being allowed to fall on the carbolized floor. Then the woodwork is washed with carbolic solution, the crumbs gathered up and burned, and the floors washed with water.

The room should be finally exposed as fully as possible to the air for at least twenty-four hours, and longer if it is practicable.

Now, this will seem at first, no doubt, a very formidable process, but where a large public disinfecting plant is available it is, after all, comparatively simple; and, what is much more important, if faithfully and intelligently executed, will insure purification of the infected room. Of course, other germicides than carbolic acid might be used for washing the room, such as 1 : 1000 sublimate solution, but the experimental data which these studies furnish indicate that the carbolic solution will kill the streptococcus if it comes in contact with it.

TREATMENT.

That which these studies furnish in the way of suggestions for the treatment of diphtheria has already been indicated—at least for him who reads between the lines—in every fact set down regarding the life-history and vulnerabilities of the streptococcus and its relations to the varying phases of the disease. The obvious lesson taught by a definite conception of the nature of the germ which causes diphtheria is not to

¹ A large and well-arranged disinfecting plant is now being planned for the city of New York, and will, it is hoped, soon be in operation. Where such disinfecting stations do not exist, as they should in every large town, a thorough scrubbing of the surfaces of mattresses, pillows, etc., with 2 per cent. carbolic solution and subsequent prolonged exposure to the air, and boiling of blankets, coverlets, etc., after washing in the carbolic solution, will be perhaps the best procedure.

dally with fancy mixtures which have at best a moderate germicidal power, but to get at the growing germ, as directly as the seat of the lesion will permit, with some agent which we know will kill it.

It does not lie within the scope of this paper to suggest any detail as to the treatment of diphtheria. But the points which I would especially emphasize are: First, the evidence here adduced that the germ primarily gains a foothold at the seat of the local lesions, inducing its general effects upon the body at large by the local production of an absorbed ptomaine; second, the vulnerability of the germ to certain commonly employed germicides; third, the propriety of making germicidal applications to the mouths and throats of individuals liable to infection. It will thus be seen that the immediate practical outcome of these studies, so far as the treatment is concerned, is rather to confirm the importance of local antiseptic methods, and to give precision to the ends which we may hope to attain by them, than the suggestion of anything new.

The writer hopes, in conclusion, that these studies, by lending clearness to our conception of its nature, may aid in the control as well as in the treatment of a disease which, in town and country, in this and other lands, claims yearly so many victims.

February 7, 1889.

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ELECTROLYSIS.

PROPER AND IMPROPER METHODS OF USING IT IN THE REMOVAL OF HAIRS
AND KINDRED OPERATIONS.

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It might seem as if the last word had been said for the removal of hair by electrolysis, and yet daily experience convinces me that much more remains to be said. The operation as ordinarily performed leaves scars of greater or less magnitude, and as long as this is the case the operation is not a complete success. All writers that I have read admit that scars necessarily follow the operation. Fox, White, Amory, Hardway, Duhring, and Jamison make this admission. The writer confesses to having formerly expected similar results. It is true that the magnitude of these scars varies inversely with the skill of the operator, and it is possible that in the hands of an experienced operator like any of those just mentioned, they may be reduced to a minimum of disfigurement.

"If the operation is very skilfully performed," says Fox, "it ought not to leave scars *as a rule*.¹ In some cases it is impossible to prevent the production of minute punctate cicatrices, which, however, can only be seen on close inspection." As a result of still further experience he says:

"Without the requisite skill, which comes only from practice, an unnecessary amount of pain is usually inflicted upon the patient; a considerable degree of inflammation of the skin is occasioned; disfiguring scars are apt to be produced, and a large proportion of the hairs operated upon are apt to return: but when the operation is properly performed the pain is slight, the inflammatory reaction is scarcely noticeable, no *disfiguring*¹ scars result, and the permanent removal of the hair is assured." "In the majority of cases it is possible to remove hair from the face without leaving any permanent mark, but unless an unusual amount of care is exercised a number of faint punctate cicatrices may sometimes be left as a result of the operation. But these are usually insignificant, being only apparent upon a very close inspection of the skin in a good light, and they are rarely thought worthy of consideration by the patient who is rejoicing over the permanent removal of the hairs."²

But every one has not the experience and consequently cannot acquire the skill of the author quoted. Though in his skilful hands the operation may not result in greater blemishes than he describes, in the hands of others with less experience it does result in unsightly disfigurement, as he himself points out. The fault lies, I am satisfied, in imperfect methods, insufficient apparatus, and erroneous notions of electro-physics, rather than in the personnel of the operators; and though Dr. Fox and

¹ Italics not in original.² The Use of Electricity in the Removal of Superfluous Hairs Detroit, Mich.

a few others may be able to compensate by great skill and experience for such insufficient apparatus and faulty methods, to others less skilful, but yet ambitious to perform the operation, this is not vouchsafed. And after all, the "minute cicatrices" described are blemishes and undesirable, even though not complained of by grateful patients.

An illustration of the unfortunate results of the operation was forced upon the writer's attention recently in the person of a very handsome young woman whose marked beauty was marred by the unsightly scars which appeared, at first sight, to have been smallpox, but closer observation showed they had been artificially made by electrolysis. When it is remembered that with proper precautions and with proper apparatus these scars were *entirely unnecessary*, one can understand the gravity of the accident that caused them.

That this disfigurement of the face by unsightly scars is no infrequent accident a little observation in the street will satisfy any one for himself. Certainly the experience of the writer enables him to see numerous patients who have been thus disfigured.

The purport of this paper is to emphasize the value of certain methods of using electrolysis in order that the best results may be obtained.

Continued experience has demonstrated to me that when one can operate under his own conditions scars, even minute cicatrices, are absolutely unnecessary.

The principal reasons for disfigurement of this kind are either, first, unnecessarily strong currents; or, second, currents of unnecessarily long duration. The first, when not intentional, is due to either, *a*, not using suitable means for measuring the current; or, *b*, not using suitable apparatus to insure a definite current of a constant, pre-determined strength.

In a paper published in the *Boston Surgical and Medical Journal*, November, 1886, I called attention to the necessity of always using an absolute galvanometer in the circuit. In this paper the fact was pointed out that with the apparatus usually employed the strength of the current varied immensely, sometimes fivefold during the course of a sitting, owing to variations in the wetness or dryness of the electrodes, the amount of pressure with which they were applied, etc., and to recognize these oscillations in the current an absolute galvanometer was necessary. So far as the use of the galvanometer is concerned, I have little to add to what was said then.

To use electrolysis without one at this date seems little less than inexcusable blundering, though I am surprised to find little or no reference to such an instrument in works on dermatology. To neurologists who are familiar with the use of electricity, the neglect to use a galvanometer by those who use electrolysis seems incomprehensible. What was said in the paper just referred to regarding the possibility of avoiding scars by this means has been confirmed by the continuous experience of the writer; but

care and watchfulness are required. I have, though, to modify somewhat what was said regarding the maximum of strength and duration of current to be used. Since then, with a view to maintaining a current at any desired strength without oscillation, I have adopted a method which completely fulfils this object. It consists in using a powerful battery (80 to 100 cells) of high electro-motive force, with a high resistance introduced into the circuit, instead of the usual weak battery (10 to 15 cells) with low electro-motive force.

That is to say, as the operation is usually performed, a battery of 10 to 15 cells is used. If these be of the zinc-carbon variety (say a Leclanché battery), and supposing the resistance of the body to be 3000 ohms and neglecting the resistance of the battery, 10 cells would give a current of 5 milliampères—an unnecessarily strong current in my opinion.

By the method which I have adopted the same current may be obtained, but with many advantages. Suppose instead of 10 we use 100 chloride of silver cells (equivalent to about 70 Leclanché), and introduce by means of a rheostat a resistance of 20,000 ohms into the circuit. A current now will be obtained of 5 milliampères as before, but it will have the great advantage over the former current of being of constant strength and practically without variations, an advantage which a little consideration will show to be of inestimable value.

The strength of current is determined by the formulæ $C = \frac{E}{R}$, where E = electro-motive force of battery and R is the resistance of battery and outside circuit. Now when 10 zinc-carbon cells are used, the "current strength" $C = \frac{15}{3000} = .005$ or 5 ma.

If now, by chance, the electrode and skin have become dry, as frequently occurs during the course of a sitting, the resistance may increase to 5000 ohms or more, reducing the current to 3 ma. If again the skin becomes hyperæmic and the electrodes are freshly moistened, the resistance may be reduced from 5000 to 1000 ohms, and with this the current jumps up to 15 milliampères, a current capable of disfiguring the skin beyond repair. When, however, the second method (the one here advocated) is adopted we have an absolute safeguard against this accident. Now, as will be seen at once by reference to the formula, $C = \frac{100}{20,000 + 3000} = .0043$ or 4.3 milliampères; 20,000 ohms being the resistance of the rheostat and 3000 that of skin and electrodes.

If the resistance of the body and electrodes, for reasons just given, should diminish to 1000 ohms or increase to 5000 ohms, the current would be only increased or diminished to 4.7 and 4 ma. respectively, an insignificant variation of 0.4 ma. Even this small variation would be still further reduced, if instead of using a current of 4 to 5 ma., we

use, as is far better, a current of from 1 to 3 ma., with a rheostat resistance of from 30,000 to 100,000 ohms.

On the ground of comfort and convenience to the operator alone, the use of powerful batteries with high resistance is such an advantage that any one who has once used this mode will never give it up.

One has only to measure his current by the galvanometer before applying it to the body, regulate it to the desired strength, and then apply it with the full confidence that it will remain at a constant strength throughout the sitting whatever be the condition of the skin.—whether relatively dry or wet. One can thus measure out beforehand the exact strength of current to be used as accurately as the druggist weighs and measures the ingredients of a prescription, an advantage that must be apparent on the face of it.

The apparatus I use consists of a fifty cell Barrett chloride of silver battery (the best battery yet invented for this purpose) connected with a subsidiary carbon-zinc battery of equal electro-motive force, and in the circuit are inserted the rheostat and galvanometer. A large electrode covered with absorbent cotton serves for the application of one pole to the forearm. A chafing dish with a gas lamp at hand furnishes a constant supply of hot water for application to the face during and after the sitting. This largely prevents secondary inflammation. Before the needle is inserted the current is first regulated by the rheostat to any desired strength, the poles being put in contact outside the body, after which the electricity may be applied with confidence and without attention to the galvanometer. What would we think of a druggist who dispensed his prescriptions without scales or graduate, and merely guessed at the quantity prescribed; and yet any one who performs electrolysis without such apparatus as I have described, at least without a galvanometer, does practically this—he merely guesses at the strength of current used and often with disastrous results.

By the use of a galvanometer, alone, one can accurately measure the current, and, by breaking the circuit when oscillations in its strength occur, guard against them; but these oscillations cannot be prevented from occurring if only a few cells are used. With care, however, disfigurement can be prevented. It is in the ease and certainty with which a current can be maintained at any desired strength that batteries of high electro-motive force, combined with a high-resistance rheostat, have such an advantage.

The second cause of disfigurement is the use of currents of too long duration, but as the time element is dependent upon the strength of current employed, it cannot be governed by any apparatus, but must be left to the individual experience of the operator, who will be governed by the fineness or coarseness of the hairs and the strength of current employed. But supposing we are able accurately to measure and regulate our current, what strength of current shall we use? This is not an

easy question to answer, so much depends upon the condition present in each case. I have elsewhere stated that the strength should be not less than one-half nor more than two ma., but further experience convinces me that it is not always desirable to restrict the strength to such narrow limits, and in one respect it is probably difficult to do so, for no two galvanometers record exactly the same measurements, and a current which is given as 1 ma. by one may appear as 2 ma. on another. Furthermore, the greater the skill and experience of the operator the stronger the currents he can use with impunity. The advantage of the stronger currents is that the hairs can be removed with greater rapidity and surety. I may say I never now exceed 3 ma., as measured on my own Hirshmann galvanometer, and that only with very strong coarse hairs, and do not believe this strength should ever be exceeded. On the upper lip I never exceed 1 ma. But as much depends on the duration of the current as upon the strength, fifteen to twenty seconds being the extreme limit of duration, while three to five seconds may suffice, according to the strength of the current; but this must be determined in each case by the judgment of the operator. The operation may be compared to photography. Just as experience alone can enable a person to determine the strength of light and the time of exposure suitable in any given case, so, with electrolysis, experience alone can teach the strength and duration of currents to be used, though in both cases there are limits that should not be passed. The finer the hairs, the feebler and shorter the current that can be used; and the stouter the hairs, the stronger and longer the current required; but the weaker and shorter the current, the less liability of resulting scars.

I am free to admit that with these mild currents that I advise the liability of return of the hairs is greater than with stronger and longer continued currents, especially when the hairs are coarse. I admit that with such more hairs return than with the latter current, but a guaranty against the return of the hairs is only one and not the principal object to be sought. Those that return can be done over again. The most important desideratum is not a diminution of the percentage of the hairs that return, but *security against disfigurement*, and this can only be obtained by the employment of some such methods as I have advocated.

I also admit that there are patients to whom a small bill and time are of more importance than scars. The necessities of some compel them to accept the latter evil; to such I am in the habit of giving the choice of method, explaining that they can have the hair removed rapidly with the chance of scarring, or more slowly without such danger. I think no one will deny that a person has the right to demand that the operation be done in the best possible way, and that the opportunity be at least offered of having the chances of disfigurement reduced to a minimum, even though these be limited to "punctate cicatrices."

I cannot forego saying a word on the subject of the so-called quantity

batteries and "quantity" currents, as it is a source of much misunderstanding, even with otherwise expert medical electricians. Many writers insist upon the use of batteries arranged for quantity (that is, with large plates and small internal resistances, or connected for "surface" instead of "in series") with the idea that the current from such a battery is less painful and more efficacious. The absurdity of this proposition will be apparent to any one who reflects upon the meaning of electrical units. To compare the currents from two batteries we must, of course, compare currents of the same strength, say 1 ma. Now a current of 1 ma. means the quantity of one milliweber of electricity flowing through a given conductor in each second of time just as we would speak of the strength of the current of a stream of water being indicated by the quantity of water flowing in each second of time, as one gallon per second; or a cubic foot of gas per hour. Now to say that a milliweber of electricity per second from a "quantity battery" differs from a milliweber per second from an "intensity battery" flowing through the *same conductor*, is equivalent to saying that a current of a gallon of water per second from a large reservoir differs from a current of a gallon of water per second from a smaller reservoir placed at a greater height and flowing through the *same sized pipe*. If, as is said, the *force* or *intensity* of the stream is greater in the latter case than in the former, then, as the size of the pipe is the same, more than a gallon of water must flow per second, and in the case of the electricity more than one milliweber per second. In short, a milliamperè of electricity means a given *quantity* per unit of time, and so long as you do not change that quantity the form of the battery is without effect. To say otherwise is much like saying that feathers weigh more than lead.

But there is one truth underlying this notion of quantity batteries, and this is, that a given number of cells connected "for surface," give, *when applied to the body*, a *weaker* current than the same number of cells connected "in series," consequently the pain of course is less, and those who recommend such batteries are unconsciously recommending what has been advocated here, namely, weak currents, only without the advantages of constancy.

In the preceding discussion reference has been made entirely to the use of electrolysis in removing hair; but it must be apparent that the same principles hold good for all other uses to which electrolysis may be put, when comparatively weak currents are employed. In operating upon vascular tumors of the skin, moles, *nævi*, strictures of the urethra, and removal of ingrowing eyelashes, the same methods should be employed. I cannot help thinking that the diverse results obtained by different experimenters in operating on urethral stricture may be accounted for by the faulty methods employed. When high currents are necessary, as in uterine fibroids, small oscillations are of no importance, and a galvanometer only is necessary.

REVIEWS.

ON THE DISEASES OF THE KIDNEY AMENABLE TO SURGICAL TREATMENT.

By DAVID NEWMAN, M.D., Surgeon to the Western Infirmary, Pathologist to, and Lecturer on Pathology at, the Glasgow Royal Infirmary, etc. 8vo. pp. xlv., 472. London: Longmans, Green & Co., 1888.

THIS is a modern book, one, indeed, which could not have been written twenty years ago, for the simple reason that at that time few of the observed facts on which it is based were known to the profession. It serves as well as any book we know to mark the changes which have occurred of late years, and is a landmark at which, while looking back upon the achievements of the science it records, one may well be filled with anticipations of what the coming art and science of surgery are soon going to be.

While originally prepared as lectures to practitioners, delivered in conjunction with others by Prof. Gairdner and Dr. Coats, they have been much enlarged and extended, until neither in length nor any other characteristic are there preserved evidences to show that the author expected to be listened to, rather than read. Thus the book has been made much more valuable and instructive, though it gains nothing in attractiveness of style. Indeed, we conceive of the book being much improved for purposes of study by its being recast into a regular and systematic treatise. This, however, is largely a matter of opinion, and we hasten to give our readers some idea of the scope and extent of this very able book in its present form.

The first lecture contains a complete study of malpositions of the kidney, once regarded as mere anatomical curiosities, but since the impetus given to renal surgery by Simon's observations, now to be classed among those which surgery may hope to benefit by one or more methods of procedure.

Dr. Newman shows the importance of distinguishing between displacement without and displacement with mobility, the latter of which alone generally gives rise to serious symptoms, or affords hope from the use of remedial measures. He also distinguishes between "movable kidney," where the organ is behind the peritoneum either in its adipose and enlarged capsule, or in a space between the peritoneum and the abdominal wall; and "floating kidney," where it moves about in the abdominal cavity, being attached, like the other organs in that cavity, to the spine by a mesentery of its own of greater or less length, or rather a mesonephron. This latter form is much more rare than the former, and its existence or clinical importance has even been denied by Lawson Tait; but there seems good reason to regard this as a somewhat bold statement, which cannot be maintained in the face of recorded observations by competent men, however extended may be the experience of any one individual.

The lecturer then goes into a careful study of "movable kidney," and shows by the observations of himself and Skorzewsky that it is much more frequent than is supposed, because it is not generally looked for, and may quite easily be unnoticed though it has a mobility of some three inches in area. It seems to be vastly more frequent in women than men, in the proportion of seven to one, and is fairly attributable to the removal of intra-abdominal pressure after pregnancy, and the consequent dragging downward of organs but poorly supported by flaccid abdominal walls. Emaciation, especially when rapid in its progress, by its removal of the inclosing fatty tissue, would seem to be another efficient cause in producing "movable kidney." The symptoms of movable kidney are often slight, but in some cases there is marked discomfort, and a congeries of symptoms which may be in part accounted for by the elongation to which the vessels are subjected. When the symptoms are severe and cannot be relieved by an elastic bandage or some contrivance to control the movements of the kidney, the remedy is nephrectomy. The statistics of this operation, while rather discouraging, yet stimulate to further trial by the steady improvement they show. Dr. Newman has tabulated thirty cases in which the operation was done for this cause, with twenty-one recoveries and nine deaths. But this operation should only be resorted to as a matter of dire necessity when nephrorrhaphy has failed.

"Floating kidney," having a distinct meso-nephron, is a very rare affection, always congenital, and, according to Dr. Newman, despite the existence of its own mesentery, the range of movement is less than in "movable kidney." Mr. Durham has described an undoubted case, but the affection is so rare as hardly to enter into a question of diagnosis, yet its existence should not be forgotten when an operation is under consideration.

Lecture II. has to do with the general symptomatology of surgical kidney diseases. "Hæmaturia," "Pyuria," "Pain and Swelling," are considered in a most thorough and exhaustive manner as to the light they throw upon diseased conditions. To go into a detailed examination of this chapter, however essential the subject may be to arriving at a correct diagnosis, would be out of place here, and transcend the limits of a brief notice like this.

The next lecture deals with "Congenital and Acquired Hydro-nephrosis," their physical signs, symptoms, diagnosis, and prognosis. Simple cysts, and cystic degeneration, hydatid cysts, and congenital cysts, are also considered in the same connection. To show the thoroughness with which Dr. Newman has treated his subject, we notice that he has collected and studied no less than 665 cases of acquired hydro-nephrosis, 448 of which were double and 217 single. When a hydro-nephrosis without suppuration requires surgical interference, in a few cases, as when caused by torsion or angular insertion of the ureter, tapping may be successfully resorted to; or where the trouble is an impacted calculus, manipulation gently applied over the course of the ureter may be tried, but in the majority of cases free lumbar incision, with good drainage, is the operation indicated. When the circumstances of the case demand nephrectomy it should only be resorted to after a nephrotomy, and when the other kidney is known to be healthy. Dr. Newman tabulates 21 nephrotomies and 46 nephrectomies.

Having thus considered those accumulations which are non-inflammatory in their origin, the lecturer next takes up those which are

dependent upon suppurative disease. He describes pyelitis, when inflammation of the mucous membrane of the pelvis leads to suppuration without distention of that cavity; pyonephrosis, when mechanical obstruction aids in retaining this inflammatory material; pyelonephritis, when this inflammation extends to the tissue of the kidney itself; suppurative nephritis, when the inflammation is situated in the gland tissue alone; and perinephritic abscess, when the inflammatory changes are located in the tissues around the kidneys. In connection with these suppurative affections, Dr. Newman also considers in this chapter the subject of calculus. That there is a fitness in so doing no one will question who remembers how constantly stone is at the bottom of renal suppurations, yet lithiasis is a subject so separate in its histological relations, that few would think of looking for it in a chapter treating of inflammatory affections. Dr. Newman strikes a blow at the old term diathesis, maintaining that a calculus is formed on account of a local derangement of the urinary passages, rather than as a consequence of a constitutional peculiarity of the individual. We do not dispute the pathological accuracy of the lecturer, yet we are sufficiently old fashioned to find the term a convenient one in certain cases, and one which it is rather hard to do without.

From the list we have given of its contents, it will be seen that this lecture, covering more than one hundred pages, is a most comprehensive one. It does not claim to be exhaustive, and this is especially so on the subject of calculus, but we know of no better presentation of the symptomatology of a very important, and often very perplexing class of cases than is to be found in Dr. Newman's utterances. Indeed, this chapter may very well stand for a sample of the new surgery which has had its rise within the memory of men yet in middle life, and which is so bright in promise for the future. Here also may be found tables presenting the latest information as to the results obtained by operative proceedings in cases where so generally all other treatment is merely palliative. These tables will be carefully studied by every one who desires to be thoroughly furnished and prepared to grapple with renal diseases. To analyze them would be instructive, but the new journal, to keep up with the new surgery, must limit the extent of notices of books which to be fully appreciated must be closely studied. The general treatment is also judiciously considered by our lecturer, and what he says may safely be looked upon as the latest word of our healing art upon the subject.

Passing on, we next find our author treating of "Infective New Formations in the Kidney," in which term he includes tuberculous and scrofulous disease of that organ. Injuries of the kidney and ureter are also treated of in this lecture. Cases are given and the latest attempts to remedy the conditions, so often hopeless, are fully set forth in a very satisfactory way.

The remaining lecture deals with "Renal Non-inflammatory Neoplasms" and "Operations on the Kidney." The new growths are as follows: Fibromata and fibrocystic tumors; osteomata, a very doubtful class; lipomata and fatty transformation; hæmatangiomas; adenomata; papilloma, of which Billroth narrates a unique case; carcinomata; lymphadenoma; and sarcomata.

Dr. Newman favors an early operation, so soon as the character of the growth is made out, he thinking that in this, as in so many other operations, the time of its performance is more important than the

method, provided that the latter is intelligent and skilful. The great difficulty is that by the time the growth has made such progress as to be recognized by palpation, it has often formed attachments to the neighboring parts which make its complete removal hopeless. Dr. Newman evidently favors a resort to nephrectomy in suitable cases, from his belief in the somewhat slow progress made by malignant disease when it invades the kidney, and the consequent comparatively slow rate at which adhesions are made. Indeed, the propriety of resorting to an operation at all, where the disease is a malignant tumor, can only be justified when the operator is convinced that there is a fair prospect of lengthening the patient's life and promoting his comfort by interfering. Nor can statistics, which go no further than to state the fact of the patient's death or recovery, settle this question. Such tables do show the relative mortality of a given operation; but it is necessary to study the results during a longer period, if we would have a true idea of the real value of the procedure. We may very soon be able to point to the fact that the operation has not killed the patient, and in the new and improved surgery there are comparatively few operations which are directly lethal when intelligently done; but when the proceeding has been undertaken to remedy a condition notoriously prone to recurrence, nothing should be satisfactory in the way of a result, or be thought of as a cure, which has not stood the three years' test to which the profession generally has given assent of late years. When the result of an operation is less than this it can only be regarded as a palliative measure. Dr. Newman maintains that the propriety of operating must depend upon the peculiar circumstances of the case and the opinions of the surgeons. How important are right and just opinions seen to be in the light of such a dictum. While we thus lean to an old-time conservatism, it should not be forgotten that the few true recoveries which have taken place would never have been recorded had it not been for the bold and energetic actions which have been essential to the character of the pioneer. No man dieth to himself, and in surgery, as in other things, the good of the individual is best served by that which makes for the good of the greatest number. Were it not for this, how often would the hand of the surgeon be held as he attempts to look into the future and to predicate what will be the precise result in a given case. Here it is that statistics are of the greatest value when honestly and fairly tabulated. Dr. Newman has collected 26 cases in which nephrectomy was done for cancer, in which 15 died and 11 recovered; and 36 cases in which the same operation was performed for sarcoma, of which 19 died and 17 recovered. It must not be forgotten that the recoveries were from the operation, and that of those whose history has been preserved, several are known to have succumbed to a recurrence of the disease.

The study of renal surgery has developed two sets of operations, one being as aids toward the formation of an exact diagnosis, the other for the more or less complete relief of the patient. With descriptions of these procedures Dr. Newman concludes his sixth lecture and his book.

When so grave an operation as nephrectomy is under consideration, it is of the first importance to ascertain whether both kidneys are diseased before making an attempt, which, to be successful, requires that at least one of them should be healthy. Therefore, most ingenious experiments have been made to secure the urine from one kidney unmixed with that

from the opposite side. To do this, the ureter must be catheterized, or one must be compressed while urine from the opposite side is allowed to flow unobstructed until sufficient has been collected for the purposes of examination. Several plans have been devised, and with patience and care it would seem as if one or other of these can be successfully resorted to. Dr. Newman has himself devised an ingenious apparatus by which a rubber bag can be introduced into the bladder and then filled with quicksilver, until by its weight sufficient compression is exerted upon one ureter to prevent it supplying any urine, while the now empty catheter which has conveyed the balloon will drain the bladder of the urine supplied from the other side. Of course, we have had no experience with this machine, and Dr. Newman has, but we should think it would be difficult so to direct a mass of quicksilver as large as a "hen's egg," that being the size to which the bag is to be expanded, with such accuracy as to be confident that it really occluded the mouth of the ureter. We cannot help thinking that most surgeons, when called upon to perform this difficult manipulation, will succeed better by attempting to compress the ureter between a largely curved catheter and two fingers introduced high up into the rectum. Catheterization is much more satisfactory, but while it can be generally performed successfully in females, the difficulties in the opposite sex are very much greater. Dr. Newman figures a speculum and an electric endoscope he has devised to aid in catheterizing the ureters in females, which he has found satisfactory. He has also invented catheters by which he has been able to penetrate the vesical orifices of the ureters of either side in a number of female cases, and in some cases of males. To comprehend these various forms of apparatus, our readers must turn to the book itself and the cuts it contains, as they cannot be understood from mere verbal descriptions. When samples of urine from one side alone cannot be obtained either by catheterization or compression of the ureters, aspiration can sometimes be advantageously resorted to; but, of course, neither aspiration nor exploratory nephrotomy supplies any information as to the condition of the opposite kidney, upon the healthfulness of which the success of any radical operation depends.

Nephrotomy, nephro-lithotomy, and nephrectomy are then described by our lecturer, and the indications for and mode of performing these several operations are carefully reviewed and analyzed. Carefully constructed tables, really representing the sum of our present knowledge concerning these operations, furnish invaluable aid for their proper study. We cannot follow our author into these analyses, which are themselves of the nature of a very careful and condensed review of the subject. A few words describing nephrorrhaphy, as practised to confine a movable kidney, conclude this interesting volume.

We can safely say that this book is an important and valuable contribution to surgical literature. Calm and judicious in tone, painstaking and thorough in its study of the subject, it well represents the latest knowledge possessed by the profession. We have but one suggestion to offer to its accomplished author, and that is, that in the future editions sure to be called for, the value of the book will be enhanced if the merely nominal form of lectures is forsaken, and the matter recast into a systematic and formal treatise, as we have already advised. Should our advice be taken, the book will have few if any rivals; as it is, it is worthy of the highest praise.

S. A.

DER KAISERSCHNITT UND SEINE STELLUNG ZUR KÜNSTLICHEN FRÜHGE-
BURT, WENDUNG, ATYPISCHEN ZANGENOPERATION, CRANIOTOMIE UND
ZU DEN SPONTANEN GEBURTEN BEI ENGEN BECKEN. IN 6 BEITRÄGEN
AUS DER K. K. WIENER UNIVERSITÄTS-KLINIK FÜR GEBURTSHILFE
UND GYNÄKOLOGIE DES HOFRATHES PROF. CARL BRAUN VON FERN-
WALD. Herausgegeben von DR. EGON BRAUN V. FERNWALD und DR.
KARL A. HERZFELD. Wien, 1888.

THE CÆSAREAN SECTION IN ITS RELATION TO INDUCED PREMATURE
LABOR, VERSION, ATYPICAL FORCEPS OPERATIONS, CRANIOTOMY AND
SPONTANEOUS BIRTH IN CONTRACTED Pelves. BEING A SERIES OF
SIX ESSAYS BASED UPON THE MATERIAL OF THE VIENNESE UNIVERSITY
CLINIC FOR OBSTETRICS AND GYNÆCOLOGY, UNDER HOFRATH PRO-
FESSOR CARL BRAUN. By DR. EGON BRAUN and DR. K. A. HERZ-
FELD. Vienna, 1888.

WITH the appearance of Professor Leopold's book in the spring of 1888, upon the "Cæsarean section in its relation to induced premature labor, turning and perforation in contracted pelve-," and the present work issued from Hofrath Carl Braun's great clinic in Vienna, scientific obstetrics seems to have received a fresh impetus. We have here the rich material collected from 20,607 labors, with careful observations made upon the 444 cases of contracted pelves included, with a description of the modes of labor, induced premature labor, turning and craniotomy, also cases of the modes of a typical forceps deliveries, as well as those of spontaneous delivery. The great interest in this work hinges upon the establishment of the proper position of the Cæsarean section relative to these alternatives, and above all in the answer to the question, "Shall the Cæsarean section be performed on a relative indication, when craniotomy will surely save the mother?"

Induced premature labor was brought on 54 times in 23,911 cases, or twice in a thousand case-, by deep puncture of the membranes, in contrast to seven times in a thousand cases in Professor Leopold's clinic, where labor was brought on by the introduction of a bougie.

All of the 54 *mothers* recovered, mostly after a normal puerperium, in contrast to a mortality of 10 per cent. in Berlin, and 2.2 per cent. in Dresden.

Of the 55 *children* (one case of twins) thus born, 7 were already dead before operation, leaving 48 living children, of which 35, or 73 per cent., were born living. Five of the survivors died within a few days after labor, so that but 62 per cent. of the children left the institute alive. The pelvic measurements show that artificial premature labor cannot yield good results in pelves contracted below 7.5 centimetres. The conclusion reached, is that induction of premature labor is not only justifiable, but a perfectly safe procedure for the mother when deep puncture of the membranes is used under full antiseptic pre-

¹ Der Kaiserschnitt und seine Stellung zur Künstlichen Frühgeburt, Wendung und Perforation bei Engem Becken. Unter Mitwirkung von Dr. J. Korn, Dr. H. Lohmann, und Dr. J. Prager. Herausgegeben von Dr. G. Leopold, K.S. Medicinalrath, Prof. der Gyn., Direktor der Königl. Frauenklinik und orden. Mitglied des Kgl. Sachs. Landes-Medicinal Collegiums in Dresden. Stuttgart Verlag, von F. Enke, 1888.

cautions. Also that there is a fair probability of saving the life of the child when the conjugata vera is not less than 7.5 cm., and the interruption of the pregnancy is not too early.

Turning and extraction was performed 89 times in contracted pelves, in 20,607 labors, or four times in each thousand cases, also in marked contrast to the Dresden statistics of 11.8 per thousand.

Result to *mother*: 4 women were brought already infected into the institute, of whom *one* died, another died of profound anæmia, so that 87 women left the institute alive, and the burden of responsibility upon the clinic lay at *no per cent.*, similar to the Dresden clinic.

Result to *child*: 55 children were born alive and 34 dead. In 14 cases, however, turning was employed after examination had shown the child to be no longer living, leaving 75 cases in which the child was alive; of these children, 55 were born alive and 20 dead (5 of the 20 required perforation to complete delivery).

The *pelvic* measurements in these cases show that in flat contracted pelves, even down to a conjugate diameter of 8 cm. turning yields good results for children as well as mothers. Dr. Löhman has shown by the Dresden statistics that medium-sized children could sometimes be produced living even in pelves with a conjugate of 7.5 cm. or 7 cm. In equally-generally-contracted pelves there is little probability of producing a living child in a conjugate below 8 cm. Turning is the favorite method in Braun's clinic in cases of contracted pelves.

Atypical forceps deliveries in contracted pelves. There were 78 atypical forceps cases in contracted pelves among 20,607 births, or four in each thousand cases. *Results to mothers*: 1 died of sepsis on the seventh day. 77 left the institute alive. In the forceps deliveries the following diseases were observed during the puerperium. 1 case of pneumonia, 1 of albuminuria, 2 of cystitis, 2 of separation of the symphysis; and the following infectious diseases, 9 cases of endometritis, 1 of parametritis, and 6 febrile cases. The morbidity, therefore, in relation to infectious diseases appears much higher in forceps cases than in turning or puncture of the membranes and premature labor. *Results to the children*: 90 per cent. were born living, and 10 per cent. dead. In flat contracted pelves, with a conjugata vera from 10 to 9.5 cm., all of the ten children were delivered alive. In flat contracted pelves with a conjugate from 9.4 to 9, 3 out of 16 children were born dead. Under 8.5 cm., 4 out of 5 children were dead. In flat contracted pelves with a conjugate from 8.4 to 7.5 all 8 children were born living. 1 of these last weighed 3660 grains, and was 52 cm. long. In universally-equally-contracted pelves between 9.5 and 10 cm., 50 per cent. of the children were born dead.

Craniotomy in contracted pelves. In the total number of 20,607 labors there were 56 craniotomies for contracted pelves, or 3 in every thousand cases. *Result to mothers*: 5 died; 4 of these were in a condition of septic infection when brought to the clinic, so that a burden of 1.96 per cent. falls upon the shoulders of Carl Braun's clinic, in contrast to Leopold's mortality of *nil* per cent. in Dresden, and Gusserow's of 13.9 per cent. in Berlin. *Deductions*: Craniotomy can be well carried out in pelves even as narrow as 7 cm.

Natural labor and unassisted delivery in contracted pelves was observed 163 times in 20,607 births, and of these only 3 children were born dead—that is, 1.8 per cent. dead, 98.2 per cent. living. 47

cases of spontaneous birth occurred in pelves with a conjugate diameter which was not above 8.5 centimetres. In 27 cases of flat pelves with a conjugate between 8 and 8.5 cm., 27 children were born unassisted, 25 of these were living, and but 2 dead. In generally contracted pelves of 8.5 and under, in 20 cases, 20 children were born living.

Cæsarean and Porro Cæsarean section were performed on an average of 1 case in every 1873 births. Of 17 of these cases 7 died, or 41.2 per cent. The year 1888, however, showed marked improvement in this operation, in that in 6 cases only 1 ended fatally.

The highly conservative principles upon which the Cæsarean cases were selected, are exhibited in the fact that in the first ten cases (all Porro-Cæsarean) the conjugata vera did not exceed 6.5 cm. Case 11 in the list was performed for rupture of the uterus, and cannot therefore, strictly speaking, be either a Säger-Cæsarean or a Porro-Cæsarean operation. The delivery in this case was effected by enlarging the tear with a knife, extraction of the child, and subsequent suture. The child was dead, but the mother recovered. Case 12 was a Säger-Cæsarean section which died of peritonitis on the fourth day. (Cases 13 and 14 were Porro operations in which the conjugate measured 55 cm., both mothers recovered, and both children were living. Cases 15, 16, and 17 were all Säger operations, all recovered, and the children were all born living.

So much for the brief summary of this large material. Are we warranted at once in drawing any definite conclusions as to relative indication for these various operations, and, above all, can we thus determine the proper relative position of the Cæsarean section? We think not. Great as the material is, it is too much under the control and liable to the bias of one man, to enable us to rest with entire satisfaction upon the conclusions, as final. Individual differences are especially noticeable in the Cæsarean list. While our list of 17 cases gives us 2 children dead (not counting the case of rupture of the uterus) and 6 mothers died, Leopold's list of 23 cases shows all the children born alive, and but 2 mothers died, or 8, 6 per cent., or from a summary of all the cases in Leipzig and Dresden, performed by the Säger-Cæsarean method, 33 in all, a mortality of 9 per cent.

We shall look with interest, for the appearance of a summary of the world's cases, such as has been wont to appear from time to time from Dr. Harris's pen, with especial reference to the thorough antiseptic conditions of the operation, the careful suture of the uterus by Säger's method, and the timely aid afforded before the woman has been too long in labor.

H. A. K

DISEASES OF THE SKIN: THEIR DESCRIPTION, PATHOLOGY, DIAGNOSIS, AND TREATMENT. By H. RADCLIFFE CROCKER, M.D. (Lond.), F.R.C.P. Lond., Physician to the Department for Diseases of the Skin in University College Hospital, etc. 8vo. pp. xxxii., 746. Philadelphia: P. Blakiston, Son & Co., 1888.

DR. CROCKER has long been favorably known as a chief figure in what one may perhaps venture to call the dermatological renaissance in England. His contributions to current literature have been numerous

and valuable, and the various sections on diseases of the skin written for Heath's *Dictionary of Surgery* exhibited a marked faculty for the presentation of facts in an orderly and comprehensible way. It may, therefore, be said at once that in the treatise before us Dr. Crocker has more than kept the promises given in his other works.

The book is gracefully dedicated to the memory of the late Dr. Tilbury Fox, for whose teaching and example the author expresses the deepest obligations.

Contrary to the usual custom in works of similar magnitude, all references to the anatomy and physiology of the skin have been omitted, although the first few pages are occupied with woodcuts, after Heitzmann and Ranvier, showing the normal structure of the integument. The omission of the explanatory text is to be regarded as commendable, since much valuable space is generally devoted to information that is already in possession of the specialist, and which the student can readily find elsewhere. We also think that the preliminary chapters on semeiology, general therapeutics, etc., could as well have been spared for the same reasons.

Dr. Crocker has had the courage of his convictions, and has refrained from inflicting a brand new classification of his own on an already overburdened profession. The scheme adopted is mainly that of Hebra, with here and there certain modifications rendered necessary by the present state of knowledge. Clinical convenience has been consulted rather than an attempt at impossible scientific accuracy.

After disposing of these prefatory considerations, the author takes up the discussion of the special pathology and therapeutics of the skin. Even in his own special field of pathological anatomy, Dr. Crocker has kept himself well in hand, and by an arrangement of the type much that would be read with profit by the physician may, temporarily at least, be passed over by the student. Occasionally, it seems to us that some subjects have received inadequate treatment on the practical side; for, after all, the end of medical learning is the cure of disease.

While hardly relevant here, still, in this day of extreme devotion to pathology, the dictum of Hebra, "Wo der Patholog und der Kliniker im Streite sind, muss der Kliniker Meister sein," should be constantly in mind. Dr. Crocker has hardly sinned at all in giving undue prominence to pathological questions, but we confess to some disappointment at the comparatively short space allotted to that most important and most frequent of all skin diseases, eczema.

The author's special views on certain dermatological questions are well known to readers of current literature, and we need only mention, among other matters, that the essential connection between scleroderma and morphœa is again brought forward. Under the rather unfortunate title of hydroa he accepts as a substantive affection the group of clinical symptoms called by Dühring dermatitis herpetiformis. Dr. Crocker avers that Tilbury Fox and Dühring were the first in recent times to give a precise signification to this disorder. We remember Fox's contributions very distinctly, and we must believe that, whether ultimately right or wrong, the credit of the generalization belongs to the American dermatologist. Dr. Crocker would still look upon impetigo herpetiformis as belonging to a class by itself.

Certain other points of interest may be briefly noted. The so-called seborrhœal eczema receives scant notice. Under the head of seborrhœa,

the author states that this condition is declared by Unna to be always inflammatory, but that, on the contrary, though often accompanied by inflammation, there are many exceptions. The same German observer's theory of the function of the sweat glands is merely mentioned without further comment.

After giving in some detail the points bearing on the relationship of lupus and tuberculosis, the conclusion drawn is that, at best, the former condition is a local tuberculosis without any tendency to generalize.

Ichthyol, as a remedial agent, is somewhat curtly dismissed, and in Dr. Crocker's estimate of the drug we must also concur. Sulphur, in teaspoonful doses in milk, twice a day, is extolled as a remedy of considerable power in hyperidrosis. Upon this recommendation we tried it in an obstinate case of sweating of the palms, and we were much delighted to find that its beneficial action had not been over-estimated. On the other hand, counter-irritation in some forms of eczema, a method of treatment introduced recently by Dr. Crocker, has not given any special results in our practice.

To give anything like a satisfactory sketch even of this important work, we should be obliged to extend this notice beyond our limits, and we shall, therefore, have to content ourselves in conclusion with a few brief remarks on its general method.

We are acquainted with few books in which the subject is so systematically handled. Every theme, with but few exceptions, is thoroughly treated, and the author has certainly mastered the happy faculty of saying much in a comparatively few words. Each disorder is considered from the standpoint of its symptomatology, diagnosis, pathology, anatomy, and therapeutics. A foot-note to most of the chapters gives a good working bibliography, in which no trustworthy reference is overlooked, and numerous other citations throughout the text bear witness to the author's wide reading. Many well-executed cuts illustrate the morbid anatomy of the diseases of the skin, and it is a notable fact that in this direction Dr. Crocker's own labors have been important and fruitful. Considerable attention is given to the maladies of the skin affecting children.

By an ingenious arrangement of bold-faced and other types the eye is attracted and emphasis laid on special points. A judicious conservatism is manifested throughout the treatise, and, at the same time, its pages discover to us the welcome truth that for the educated dermatologist the schools have lost their sway, and that at last we have all come to a very near agreement, both as to fact and expression. Indeed, we have been so favorably impressed with this valuable addition to the literature of dermatology, that we have little or nothing but hearty admiration for it, and we, therefore, take great pleasure in recommending it to the careful study of all those interested in this important branch of medical science.

W. A. H.

ZEHN FÄLLE VON THYREOTOMIE. DIE THYREOTOMIE IM VERGLEICHE MIT DEN ÜBRIGEN OPERATIVEN HEILVERFAHREN AM LARYNX. VON DR. MED. FRANZ STREITER. 8vo. pp. 125. Würzburg, 1888.

TEN CASES OF THYROTOMY. THYROTOMY COMPARED WITH OTHER OPERATIVE PROCEDURES IN THE LARYNX. By DR. FRANZ STREITER.

THIS is a strong plea for the more frequent selection of thyrotomy in preference to other procedures in the extirpation of morbid structures from the larynx. After a slight summary of the various surgical operations of the larynx, ten cases of thyrotomy from the practice of Dr. Schonborn, of Würzburg, are detailed as the theme for the plea.

Case I. was an instance of tuberculosis, diagnosed as carcinoma on the basis of ulcerative destruction of the right vocal band and the lower portion of the epiglottis, with œdematous tumefaction of the posterior wall of the larynx in a man sixty-four years of age, whose laryngeal symptoms had been of but few months' standing. The age of the patient probably led to the mistake in diagnosis, for the meagre laryngoscopic description is much more indicative of tuberculosis. The larynx was opened and the ulceration energetically cauterized with the thermocautery. The patient died twenty-two days after the operation.

Case II. was one of carcinoma in a man seventy years of age. Here the laryngoscopic description is thoroughly indicative of carcinoma; projecting thickening of the ventricular band and almost complete occlusion of the glottis by a tumor apparently beneath the vocal bands. Preliminary tracheotomy was performed, Trendelenberg's tampon canula inserted, the larynx divided with the thermocautery, and the masses cauterized. On the fifty-fourth day the patient was discharged with a moderate stenosis of the larynx and a probable carcinomatous ulceration below the vocal bands. He died about a year later from some cause unknown.

Case III. was a tumor in a man forty-five years of age. It was of the size of a hazelnut, sessile upon the inner surface of the thyroid cartilage. Thyrotomy, excision of the growth with scissors, and deep cauterization of the base with the thermocautery. The patient was doing well when discharged. Inquiry a few years later revealed that he had died in the interim of some unknown disease.

Case IV. was a case of small papilloma on the anterior half of the left vocal band of a woman forty-three years of age. The larynx was divided with the thermocautery; the growth was seized with forceps and then burnt off with the cautery—an unnecessary procedure, in the reviewer's opinion, for so slight an affection. The patient recovered thoroughly.

Case V. was a carcinoma in a man forty-one years of age. There was deep destruction in both vocal and ventricular bands, with extensive proliferations in the walls of the larynx. Cricotomy became necessary suddenly to avoid asphyxia. Thirteen days later the larynx was divided, and the parts were cauterized. A month later he went home very much reduced, and wearing his canula. No subsequent history.

Case VI., a man aged sixty-five, with carcinoma. Deep destruction of vocal bands. Thyrotomy and energetic cauterization with the hot-iron. Death the next day.

Case VII., female, aged forty-three. Agglutinative adhesion of vocal bands for a third of their extent with granulative tumor below them. Preliminary tracheotomy. Division of larynx with thermocautery eighteen days later, and energetic cauterization. Removal of canula three days later. Canula required reinsertion in six months and had to be retained until death, two months later, from pneumonia. This case reads very much like one of tuberculosis.

Case VIII., female, aged twenty-four. Tuberculosis of larynx. Preliminary tracheotomy. Thyrotomy and destruction of tuberculous masses with thermocautery. Patient discharged on eighteenth day without canula and with a good granulating wound. No subsequent history.

Case IX., male, aged forty-seven. Tuberculosis of larynx and lungs. Preliminary tracheotomy. Five days later, thyrotomy and cauterization with thermocautery. Death seventeen days later.

Case X., male, aged thirty-five. Phthisis of larynx and lungs. Preliminary tracheotomy. Twenty-seven days later, thyrotomy and energetic cauterization with thermocautery. Death one month later.

Certainly this is not a series of brilliant results. From the detailed histories of his cases the author advises that tracheotomy should always precede the thyrotomy; that eight or ten days supervene when practicable; that Trendelenberg's tampon canula should be inserted at the thyrotomy, and deep narcosis be maintained throughout the entire operation; that the soft parts should be divided down to the cartilage with the thermocautery to avoid bleeding; that extirpation of the diseased tissues should be followed by energetic cauterization with the hot iron; that sutures may be introduced superficially when the hot iron has not been used, or has been used but slightly, but that the wound must be kept open when cauterization has been used extensively, and that in the great majority of cases it is much better to use no sutures at all; and, finally, that the tampon canula should be retained in position for several hours after the operation, or until the morning following.

These points are well supported by argumentative dissertation. The reviewer has had no experience with the incandescent knife in dividing the soft tissues or the larynx itself; and he cannot comprehend the necessity for such a procedure in preference to the bistoury when the trachea is protected from blood by a tamponed canula, a precaution which affords every facility for careful operation and for deliberate arrest of undue hemorrhage. He cannot believe, either, that thyrotomy and cauterization present any advantage in tuberculosis over tracheotomy when necessary to avert impending asphyxia, and intralaryngeal treatment afterward. On the contrary, his opinion that the fatal issue is accelerated by such procedures is only too evidently supported by the histories in this series.

That the dangers from thyrotomy have been over-estimated by some writers, as is urged by the author, is only too true; but the inference that thyrotomy is the better and safer procedure in all benign growths except those most easily accessible, as is also urged, is illogical. Intralaryngeal operations have their limit; but that they are to be superseded by thyrotomy as the rule in the surgical treatment of benign growths or of tuberculosis, or even of stenoses, is opposed to the experience of those who are familiar with both procedures. It cannot be too strongly impressed upon the general surgeon that under ordinary circumstances he has no right to submit his patient to thyrotomy in a case any way doubt-

ful unless his opinion as to its necessity has been endorsed by some one thoroughly conversant with the resources of intralaryngeal methods of extirpation. The author's arguments to the contrary are largely beggings of the question. The surgeon who consults the permanent good of his patient in preference to relying implicitly upon his unassisted judgment will never make such a mistake; and it is usually the surgeons of most repute who are most desirous of avoiding unnecessary mutilation of their patients. In reference to malignant growths, however, matters are reversed; and the reviewer can fully endorse the opinions of the author. It is very rarely, and only under exceptional conditions, if not only under fortuitous circumstances, that endolaryngeal procedure is crowned with success in the treatment of malignant growths. The intelligent laryngoscopist will quickly submit malignant growths to direct surgical access. The ignorant one will temporize, and thus counterbalance the unintelligent surgeon who ignores the resources of laryngoscopic interference.

The reviewer believes with the author that when the diagnosis of malignancy has been made early enough, thyrotomy and thorough extirpation of the morbid mass will often be practicable, and will afford as much immunity from recurrence as partial or complete laryngectomy. The direction of study, therefore, should be as fully in the domain of diagnosis as in that of operative technics, and here the services of the skilled laryngoscopist are invaluable. The reviewer could testify to cases mistaken for chronic laryngitis which are revealed to be carcinoma under better illumination, and to cases mistaken for carcinoma which have been revealed as tuberculosis or as syphilis. Several instances are on record in which the tuberculous larynx has been extirpated under the opinion that it was carcinomatous.

In addition to the points mentioned, the author indicates the various diseases which may call for thyrotomy; and he discusses at length the statistics of several writers upon that operation, upon endolaryngeal operations, and upon partial and complete laryngectomy; and compares their several advantages and disadvantages.

J. S. C.

ON THE RELIEF OF EXCESSIVE AND DANGEROUS TYMPANITES BY PUNCTURE OF THE ABDOMEN. A MEMOIR. By JOHN W. OGLE, M.A., M.D. Oxon., F.S.A., Consulting Physician to St. George's Hospital; Fellow (late Vice-President) of the Royal College of Physicians of London; late Vice-President of the Royal Medical and Chirurgical Society, and of the Pathological and Clinical Societies of London, etc. 8vo. pp. 111. London: J. & A. Churchill, 1888.

It must strike one as very remarkable that such a subject as that which forms the text of the present monograph, though known, advised, and practised from times of utmost medical antiquity, has never, until now, received systematic elaboration. But for this unaccountable delay and oversight we are well rewarded by the appearance of this thorough and scholarly work from the distinguished and valued pen of Dr. Ogle.

In it he has collected all references to be found in medical history

regarding the operative relief of excessive tympanites by puncture of the abdomen, and to this erudite assemblage the author has added his own criticisms and clinical observations; expressing great confidence in the measure and urging its employment in certain well-marked classes of cases.

More than one-half of the entire work is apportioned to a most valuable summary of current British medical opinion concerning the procedure which Dr. Ogle has acquired by a vast epistolary correspondence, in the main approbatory, and containing incidentally innumerable records of cases, clinical suggestions and experiences.

The book is a complete record of existing knowledge of the subject, and will be found to contain all materials with which to form a judgment of the benefits and dangers, merits and demerits of this unsettled question.

T. S. K. M.

GONORRHOEAL INFECTION IN WOMEN. By WILLIAM JAPP SINCLAIR, M.A., M.D. 8vo. pp. 143. London: H. K. Lewis, 1888.

THIS brochure contains a concise review of the recent literature of the subject, to which are added the conclusions drawn from the writer's somewhat extended clinical studies. He agrees with the modern theory of gonorrhœa as being a disease produced by a specific germ which may be recognized with comparative ease. Gonorrhœa may be latent in men and women, the gonococcus remaining in the recesses of the genital canal, and being excited to virulence by the congestion incident to coition or menstruation.

The result of gonorrhœal infection in the female is inflammation, producing sterility through occlusion of the Fallopian tubes, and threatened septicæmia from pyosalpinx. While not an alarmist on this point, Sinclair is convinced of the frequency and serious character of gonorrhœal inflammations.

The treatment of gonorrhœa in women which the writer has found most effective is the intra-uterine injection of tincture of iodine, accompanied and followed by vaginal injections of dilute mercurial solutions. When the tubes and pelvic peritoneum are involved, perfect rest and warm vaginal injections are indicated until the gonorrhœal virus has exhausted its invasive activity; resection of the tubes is to be undertaken when pronounced symptoms of septicæmia arise.

To ascertain whether the gonococcus is latent in a man who has had gonorrhœa, Sinclair practises the urethral injection of a mild irritant; if the gonococcus is found in the slight discharge thus caused, the individual is capable of infecting another.

The book is a useful summary of our knowledge of the subject up to the present, and is written, not from the standpoint of an alarmist, but with the conservative judgment of an experienced clinical observer.

E. P. D.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

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CHLOROFORM AS AN INTERNAL REMEDY.

DR. STEPP, of Nüremberg, noting the observations of Salkowski on the disinfecting power of chloroform water, determined to make trial of chloroform internally in a considerable number of diseases. In gastric ulcer, Dr. Stepp gave chloroform (fifteen grains in a five-ounce bismuth mixture) with great effect, and believes this to be due to its disinfecting, astringent, and stimulating properties. In various affections of the mouth and throat, as follicular pharyngitis, catarrh of the pharynx, gingivitis, and diphtheria, washes and gargles containing chloroform proved very beneficial.—*Lancet*, March 9, 1889.

PROF. BIANCHI recommends chloroform water instead of alkaline solutions in washing out the stomach.—*Deutsche medicinische Wochenschrift*, February 7, 1889.

SPARTEINE.

A physiological and clinical study of the action of sulphate of sparteine, by DR. GLUZINSKI, brings him to the conclusion that this drug has, unquestionably, a good effect in cardiac cases when compensation is incomplete, and that its action is apparent soon after the administration of the drug. The rapidity of its action is the most important characteristic of this drug; in strength it is far behind digitalis, and is not to be compared with it. Arrhythmia is not corrected by it.—*Deutsche Archiv für klinische Medizin*, March 14, 1889.

SOME THERAPEUTIC USES OF WATER.

Among the applications of water to several conditions frequently met in practice, as suggested by DR. SIMON BARUCH, are the following:

Very hot water, as a styptic and a preventive of shock, should be more

widely recognized. The hot douches used in gynecology to remove inflammation, is another important use of hot water. The directions of Dr. Emmet, such as to have the patient in a reclining posture, the temperature of the water not far from 110° F., the stream intermittent, and applied by a nurse, should be carefully followed.

In certain skin diseases, of which eczema is a type, it is contra-indicated; cures sometimes follow simply from avoidance of water. A similar beneficial change in our ideas had led to the dry boric acid packing in suppurative otitis media in place of frequent injections of water.

Half a pint of hot water slowly sipped an hour before meals had been found, by actual examination, to cleanse the stomach of mucus. An occasional washing of the stomach, five hours after eating, much increased the benefit to be gained by sipping the water.—*New York Medical Journal*, March 16, 1889.

THE USE OF EXPECTORANTS.

When a cough of the expectorating variety is difficult, on account of the viscosity of the phlegm, the administration of an oil sometimes greatly lessens this difficulty. DR. W. H. THOMPSON, in a paper read before the Medical Society of the County of New York, recommends for this purpose raw linseed oil, given in an emulsion. He has found that it relieved bronchial asthma, and asthma in those much affected by changes in the weather; also, congestive bronchitis, the bronchitis of heart disease, and senile bronchitis.

The following formula is given:

Linseed oil	℥xv.
Oil of wintergreen }	āā ℥ij.
Oil of cinnamon }	
Glycerine	℥v.
Simple syrup	℥x.
Water	℥xxiv.

Made into an emulsion.

Dilute hydrocyanic acid	℥ijss.
Magendie's solution	℥xl.

Or, chloral ℥jss might be added in suitable cases.

In the discussion which followed, DR. JACOBI suggested the sipping of water or Vichy, to relieve cough caused by pharyngitis.

DR. SIMON BARUCH thought a sufficient search was rarely made for the real causes of cough. The so-called expectorant drugs were given more as a fashion than from experience. Rossbach had shown that squills, ipecac, and other agents of a similar kind so often given for coughs, were really without any expectorant effect, and that only apomorphine had such an action.

DR. DARLINGTON testified to good results which he had, for some years past, seen in bronchial coughs, from doses of pure linseed oil.—*New York Medical Journal*, February 9, 1889.

ANTIDOTE FOR MORPHINE.

PROF. BOKAI believes that the best antidote for morphine is picrotoxin. The two substances act in an antagonistic manner on the respiratory centre, mor-

phine paralyzing its action, while small doses of picrotoxin increase it. As, in poisoning by morphine, death occurs from paralysis of the respiratory centre, and as picrotoxin hinders this paralysis, it follows that picrotoxin is likely to be of real use in morphine poisoning.

In this form of poisoning, diminution of the blood pressure plays an important part, but picrotoxin enjoys the property of stimulating the vaso-motor centre of the medulla, and thus counteracts the effect of the morphine. The action of these two substances on the cerebral hemisphere, is also of an opposite character.

It is also suggested that picrotoxin may be useful as a substitute for preparations of nux vomica, and that it will be found useful in preventing chloroform asphyxia.—*Lancet*, March 9, 1889.

A NEW REMEDY FOR CHOLERA.

LOEWENTHAL (*Acad. des Sciences*, Session Dec. 1888) has concluded a course of experiments undertaken to find an antidote to the virus of cholera. This toxic principle is now, according to the newest pathology, regarded as the product of Koch's cholera bacillus—a ptomaine, in fact, which is destroyed by cultivation in artificial nutrient media.

Loewenthal has found that a pure culture of these cholera bacilli in peptonized broth previously sterilized, is absolutely inoffensive to animals—as white mice—naturally susceptible to the cholera poison; the bacilli ceasing to produce the noxious ptomaine.

The first aim of Loewenthal's experiment was to render to the cholera bacillus, by a process of the laboratory, the toxic property which it possesses when fresh, but which is lost on cultivation. After many fruitless essays, he believes that he has succeeded with a paste which contains pancreatin, and the composition of which is as follows: Fresh pork (muscle), hashed, 16 ounces; pancreas of hog, hashed, 6½ ounces; bean flour, 3½ ounces; peptone, ½ ounce; grape sugar, 2½ drachms; common salt, 1¼ drachms.

These substances, mixed with water or milk, give a soft paste, almost liquid, which is rendered alkaline by a little potash, and then sterilized by hot steam. The cholera bacilli, which by culture have lost their pathogenic properties, are allowed to breed in this artificial paste.

They immediately secrete their virulent ptomaine, which, when inoculated in mice, either kills these animals or makes them intensely sick.

By varying the elements of his culture mixture, Loewenthal finally satisfied himself that it is the pancreatic juice which, in presence of albuminoid and peptonized substances, determines the pathogenic or poison-secreting action of the bacillus.

All the other culture media (peptone-gelatine, agar-agar, bouillon) assure the development of the bacillus, but no toxic matter is produced.

The peculiar action of the pancreatic juice being understood, we have, says Loewenthal, an explanation of the phenomena of cholera in man. The bacilli, after being ingested, escape the stomach, and entering the intestine, produce there, with the help of the pancreatic juice, the same toxic matter which is produced in the pancreatic paste, the latter being a coarse imitation of the contents of the duodenum; this toxic matter is absorbed and the re-

storation or death of the patient depends on the quantity of poison absorbed and the resistance of the organism. This experimental fact is in harmony with the anatomo-pathological fact that the bacilli of cholera remain always confined to the intestine, as well as with the "fulminant cases," and the experiments of Nicoti and Reitsch, and those of Koch on animals.

This point being once determined, Loewenthal asked himself if there might not be some substance inoffensive to man which, introduced medicinally, would prevent the development of the cholera poison in the intestine. To determine this, he first experimented with his pancreatic paste, trying various antiseptic agents which he thought might prevent the active functional operations of the bacilli and the genesis of the toxic ptomaine. Any agent, he reasoned, which can accomplish this out of the body might be relied upon to do the same within the body and thus become a specific (preventive and curative) remedy for cholera.

This remedy, Dr. Loewenthal announces, he has found in salol, the salicylate of phenol, discovered in 1886 by Nencki, of Berne. This powerful antiseptic is decomposed in the organism by the pancreatic juice, the same agent which renders toxic the cultures of the cholera bacillus in the pancreatic paste. A multitude of experiments have assured him that salol in the presence of fresh pancreatic juice is invariably fatal to the cholera bacilli in his laboratory culture-tubes; and he has determined the quantity which is sure to sterilize his cultures effectually, namely, one-half drachm of salol to every two and a half drachms of the paste; a smaller dose, however (as one and a half grains), renders the bacilli inactive.

It is known that salol can be taken in pretty large doses (as much as two and a half to four drachms a day) by man with comparative impunity.

It must be added that the above interesting laboratory experiments, conclusive as they seem to be to their author, who has full faith that he has now found a sure specific for cholera, still lack clinical confirmation, as well as that confirmation which comes from a series of carefully conducted experiments on animals.—*Boston Medical and Surgical Journal*, Feb. 7, 1889.

ANTIPYRIN IN SCIATICA.

The patient had been confined to his bed for two months, and was unable to move his left leg. The hip-joint was so painful that the gentlest examination with the fingers could scarcely be borne. The slightest pressure over the gluteal, sciatic, and trochanteric regions made the patient cry out with pain. Sleep had been impossible for some nights.

Injections of morphine, anodyne applications, salicylate of soda, iodide of potassium, sulphate of quinine, tincture of gelsemium, bromide of potassium were all tried, without the least effect. Tonic treatment with iodide of iron, cod-liver oil, etc., proved equally futile.

Antipyrin was given in doses of seven grains with an equal quantity of quinine three times a day. The day after this treatment was begun the patient wished to get up and could move the affected limb quite freely. Ten days afterward he left the hospital, completely cured and having gained considerably in weight.—*British Medical Journal*, March 16, 1889.

BALSAM OF PERU IN OZÆNA.

PROF. ROSENBACH has found Peruvian balsam an excellent disinfectant in a series of cases which had resisted the usual deodorizing agents. It should be applied daily, by means of a brush, to the mucous membrane at the entrance of the nasal cavities and by means of a tampon soaked in the liquid to the deeper portions.—*Deutsche medicinische Wochenschrift*, Feb. 7, 1889.

HYDROFLUORIC ACID TREATMENT OF PHTHISIS.

In the January number of this journal an account was given of seventeen cases of phthisis treated by inhalations of hydrofluoric acid where good results were obtained. Five cases have been since reported before the Budapest Medical Society, where the results were not satisfactory.

In these cases care was undertaken to eliminate, as far as possible, the disturbing influence of climate by selecting only patients who had been for some time in Göbersdorf, where the investigation was carried out. Again, all five cases treated were in a tolerably stationary condition, but none were taken in which tubercle bacilli were not distinctly present in the sputa.

Altogether, each patient was given from forty to fifty inhalations. At first only fifty litres (quarts) of impregnated air per patient were admitted into the room during the sitting of an hour's duration. The amount was gradually increased until, during later sittings, as much as five or six hundred litres per patient were admitted.

The subjective sensations seem to have been very disagreeable, for all the patients complained of a smarting sensation in the eyes, the nose, the pharynx, and the chest, which last is described as a somewhat severe pain. The cough and the expectoration also increased, and in more than one case hemorrhages occurred. Again, all the patients complained of headache and loss of sleep. The physical results were as follows: In every case the bacilli increased and the condition of the lungs became worse; in four cases the body weight decreased from one to six pounds, increasing only one pound in one case, where, however, the other symptoms had undergone a change for the worse; in three cases the exacerbations of temperature increased to a very marked extent; in four cases the vital capacity diminished, and in the remaining case, though it increased a little, the infiltration of the lung augmented very decidedly.

From the above it would appear that so far from exercising any beneficial influence on the course of the disease, the inhalation of hydrofluoric acid proved hurtful in every one of the five cases in which it was tried.—*Lancet*, March 9, 1889.

PILOCARPINE IN THE ITCHING OF JAUNDICE.

It occurred to DR. GOODHART that a drug which so uniformly was productive of speedy diaphoresis must profoundly modify the functions of the skin for the time being, and might in doing so relieve the itching in a patient with jaundice, which had hitherto defied treatment at his hands. One-third of a grain of pilocarpine did so quite beyond his expectation and kept the patient comfortable until she died. In the next case it was equally successful. The

patient had one-third of a grain injected subcutaneously many times, and always with this result, that the first twenty-four hours he was quite free, the second he was fairly free, and the third day he was getting bad again, and the dose had to be repeated.

It was used without failure in six cases.—*British Medical Journal*, January 19, 1889.

MEDICINE.

UNDER THE CHARGE OF

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OF NEW YORK.

CUPPING-GLASSES AS DIAGNOSTIC AND THERAPEUTIC MEANS.

GEORGE WHITE (*Med. Record*, January 26, 1889, 92) has for several years made extensive use of cupping-glasses for diagnostic purposes in the localization of diseased areas. He claims that the greater the congestion is at the point of contact, the greater the cutaneous coloration; and says that he has often been able to outline accurately a congested area of deeply lying tissue in this way. A number of cases are cited by way of illustration. As a therapeutic agent, too, the cupping has often proved of the greatest value in his hands.

NEW METHOD OF TREATMENT OF TUBERCULAR PROCESSES.

LANDERER (quoted in *Les Nouveaux Remèdes*, No. 1, 1889) says that in the thorough treatment of tuberculosis, two different methods can be followed: 1, either find a specific (like mercury in syphilis and quinine in malaria), a thing which no one has as yet succeeded in doing; or, 2, imitate nature, and endeavor by an inflammatory process to transform the tuberculous focus into a solid cicatrix. That this method of cure is rare, is due to the fact that tubercle is too poorly supplied with bloodvessels and with material for reparative change to undergo the process of cicatrization. The curative action of inflammation is well seen in the amelioration, or even temporary recovery of lupus after an attack of erysipelas.

The author, in seeking to excite an aseptic inflammation by chemical means, has made use of balsam of Peru, which was recommended long ago by Sayre. Tuberculous ulcers, fistulas, etc., heal under the influence of an ointment composed of 1 part of balsam of Peru, 3-5 parts of diachylon ointment, and 1½ parts of wax. Balsam of Peru may also be introduced hypodermatically into peripheral tubercular foci, if it is prepared according to the following formula: Balsam of Peru, mucilage of acacia, āā 15 grains; olive oil, q. s. to

make a very fine emulsion; chloride of sodium, 11 grains; distilled water, 3½ ounces. The medicine is, however, not diffusible, and will not in this way reach foci removed from the seat of injection. Tubercular foci in the interior of the body are due to microbic emboli from the seat of the primary lesion. The author, therefore, proposes to bring the medicine in contact with them by means of intra-venous injection. An objection presents itself; that the particles of balsam might produce inflammation in healthy tissue, instead of attacking the diseased regions. Experience has shown, however, that corpuscular elements introduced into the blood are arrested preferably at those points where there has been a previous inflammation. It can be presumed, then, that the particles of the balsam, provided they are not larger than a leucocyte, will pass into the tissues affected by tuberculosis. Experiments on animals showed that in the cases where an injection of tubercular matter had been followed after some weeks by one of the Peru emulsion, the tubercular foci in the lungs, liver, and spleen were surrounded by an areola of inflammation, and even by a ring of connective tissue in advanced cases. The tubercular masses were dry, as though calcareous, and contained very few bacilli. The masses had, in fact, the appearance as though about to heal by cicatrization.

The author has treated fifty-one cases of tuberculosis with the Peru balsam. In the local affection the ethereal solution was applied, or subcutaneous injections used with satisfactory, and sometimes with remarkable results. The best results were obtained in fungous affections of the articulations. There were only four cases of pulmonary tuberculosis in which intra-venous injections were given, and though the treatment was well borne the results were not brilliant. For intra-venous injections the author prepares a fresh emulsion each time, making it slightly alkaline with potash. The injection is always followed by a sensation of lassitude and depression, especially in the evening. He cautions against the use of this method in advanced pulmonary infiltration, as the inflammation which it might provoke would dangerously diminish the air space.

THE LOCAL TREATMENT OF DIPHTHERIA WITH SALICYLIC ACID.

A. D'ESPINE (*Rev. Méd. de la Suisse Romande*, No. 1, 1889) takes the ground that diphtheria is at the onset a local affection, and that the general symptoms arise later from the absorption of matters produced at the seat of disease; the microbes *not* being absorbed in the blood. Reasoning on these premises, he makes several propositions regarding treatment, which may be summed up as follows:

1. Internal parasitocides, such as mercury, are useless, and only add a medicamentous intoxication to the diphtheritic. All debilitating medication should be proscribed (such as chlorate of potash in large doses, antipyrine, apomorphia, pilocarpine, etc.), and the general treatment be purely of a tonic nature; the sole indication for internal treatment consisting in sustaining the forces of the patient.

2. The sooner local treatment is commenced, the greater will be the chances of preventing the general infection. An early diagnosis is, therefore, of the greatest importance. To aid in this he advises that a portion of the white deposit be removed when it first appears, dried on a cover-glass, stained with

fuchsin or gentian violet, and examined for the bacilli of Löffler. These are of the shape of a little, curved sausage, and may usually be easily distinguished from others present. They are about the length of tubercle bacilli, but two or three times their thickness. They are best found early in the case, being difficult to discover later on account of the numbers of other growths, and the large amount of fibrin in the false membrane. At this stage, however, the diagnosis has become evident. In cases of doubt in the early stages, it is better to mistake a simple angina for a case of diphtheria, than to make the contrary mistake.

3. The local parasiticide employed should be efficient against the bacillus of Löffler. It should be used in sufficient quantity and often enough to sterilize the false membrane. For this purpose, he employs salicylic acid in a dilution of $1\frac{1}{2}$ -2 in 1000. Chlorate of potash, benzoate of soda, and boric acid may be struck from the list of topical agents useful in the treatment of diphtheria.

4. Carbolic acid, sublimate, and all other agents should be avoided, which, used in strength necessary to sterilize the false membrane, are capable of producing an intoxication.

5. In applying the parasiticide, it is necessary to avoid all procedures which may open new doors of entrance to the virus by denuding the epithelium, or which may increase the fibrinous exudation by irritating the submucous tissues.

6. The effort should be made to reach all the diphtheritic surfaces with the parasiticide.

The author recommends that the solution spoken of be used by irrigation every hour or two hours, depending on the gravity of the case. In quite young children, where a considerable quantity of the solution is swallowed, it is well to make it of a strength of 1 in 1000 or 1500. He has seen excellent results follow this treatment. In cases in which the false membrane has become quite thick before the treatment was instituted, irrigation is not sufficient to sterilize it completely. In addition to it, it would then be well to use swabbing with some agent which will soften and disintegrate the deposit, and for this purpose he knows of nothing better than lemon juice. Chloral or papain may be employed for the same purpose. The great advantage of salicylic acid is, that it is an excellent parasiticide of the bacillus of Löffler, even in the strength of 1 in 2000; and that it can be employed in large amount without fear. The author quotes, finally, from the writings of several authorities, to show that he is upheld in his favorable estimation of the drug for the treatment of this disease.

THE TREATMENT OF DIPHTHERIA WITH A SPRAY OF HYDRONAPHTHAL, PAPAIN, AND HYDROCHLORIC ACID.

W. C. CALDWELL (*Archiv. of Pediatr.*, February, 1889, 97) makes the two propositions: 1. That diphtheria is at first a local sepsis, and that the temperature is due to the absorption of leucomaines, but that it is probable that later the microbe of septicaemia, and possibly of diphtheria, may enter the blood and produce a general disease. 2. That it is probable that the pseudo-membrane is over the site of the local, primary infection, and that the bacteria

are invading the lymph spaces of the submucous tissue beneath it. The indications for treatment, therefore, are the prompt, frequent, and effective application of drugs which will remove the membrane, and thus reach and arrest the growth of the bacteria. For convenience, he prescribes these drugs in the same mixture. They must, however, be such as do not antagonize each other, or in any way be incompatible. Thus, pancreatin is an active peptonizer, but can only be used in an alkaline medium; while bichloride of mercury is a powerful antiparasiticide, but also neutralizes to a certain extent the peptonizing ferment. After considerable clinical experiment he adopted the following method of treatment, which he reports in seven cases: 1. Keeping the bowels open. 2. Ingestion of two to six ounces of milk every two hours. 3. Spraying the throat with the following prescription: Papain, ʒij ; hydronaphthal, grs. ij ; acidi hydrochlorici dil., gtt. xv ; aq. destil., ad. ʒiv . By adding ʒiv of glycerine to the mixture, its solubility is greatly increased. Hydronaphthal is a powerful antiseptic, which acts either in a neutral or acid medium, and is not poisonous. The throat should be sprayed every half hour until the temperature falls; then every hour, unless the patient be asleep. In the cases reported, the temperature fell in from four to eight hours. It is very important to apply the spray thoroughly, which is not an easy matter. Three persons are required—one to hold the child's head, one to depress the base of the tongue, and the third to use the hand atomizer rapidly for a few seconds. The child is then given a little rest, and this procedure repeated several times. The thorough depression of the tongue is an essential feature. The author admits that the treatment is best adapted to the early stages before the disease has become constitutional, and thinks it probable that in a later stage there would be danger from heart failure, or from too great exhaustion from the force required in carrying out the treatment.

SULPHONAL IN INSOMNIA.

W. L. WORCESTER (*Journ. Amer. Med. Assoc.*, March 9, 1889) has administered sulphonal to 17 insane patients. Twenty grains was the maximum dose, except in one instance in which this amount was administered 3 times in the course of one night, and failed to produce any perceptible effect. With this exception 20 grains did not fail in any instance to produce sleep, lasting usually from 5 to 8 hours. No undesirable effects were noticed on the circulation, appetite, digestion, or general condition of the patient in any instance. In one case the administration was continued for 36 days, and in another for 23 days. In neither of these was it necessary to increase the dose, but the medicine appeared rather to be more effective during the later part of the treatment than in the earlier period.

E. H. KISCH (*Berlin. klin. Wochenschr.*, 1889, No. 7, 128) reports the results of his administration of sulphonal in 24 cases. The most favorable action was seen in 12 nervous individuals suffering from insomnia, the result of various conditions of excitement. In these a dose of from 7 to 15 grains was sufficient, after one-half to two and one-half hours, to produce sleep, lasting through all, or the greater part, of the night. Three other individuals were also favorably influenced by the drug, making 62.5 per cent. successes in all. He admits that the psychic influence of the administration of a hypnotic

must be taken into account in many of these cases. In 6 cases there was no hypnotic action obtained even in doses of 30 grains. In 3 cases—*i. e.*, 12.5 per cent.—unpleasant effects were observed. One of these patients was suffering from hemiplegia, the result of an apoplectic stroke, which had occurred a short time before. Morphia had proved valueless in producing sleep, but 15 grains of sulphonal were followed by sleep lasting the entire night. On the next morning, however, the patient was completely aphasic, and this condition gradually disappeared only after 8 to 10 hours, the patient meanwhile feeling very weak. The second patient, after taking 45 grains in divided doses during the night, felt wretched and exceedingly weak on the following morning, and complained of a feeling of great depression and as though the senses were leaving him. The pulse was also retarded, beating only 38 in the minute, and this symptom disappeared only after several hours, and after the use of stimulants. The third patient, a man of sixty-two years of age, had often used morphia and chloral for sleep without effect. After 1 gramme of sulphonal deep sleep came on, lasting the whole night. On the next day, however, the patient was horrified to find that he had had a nocturnal seminal emission, the first for over ten years. He also felt sleepy the whole day, as though stupefied, and could not get up.

ACROMEGALIA.

BROCA (*Archiv. gén. de Méd.*, December, 1888) describes at great length the skeleton of the second case of acromegalia described by Marié. He sums this up by saying that there was a hypertrophy of the spongy portion of the bones of the limbs and trunk, with an increase of their porosity. The articular portion participated but little in the changes. The insertions of the tendons and ligaments were nearly all very prominent, the diaphyses were elongated, and the grooves for the arteries very large. The bodies of the lumbar vertebræ showed a tendency to a hypertrophy of the spongy portion. There was a cyphoscoliosis in the dorsal region, the scoliotic convexity being toward the left. The clinical history of this case stated that there was a hyperostosis, affecting especially the malar and inferior maxillary bones. The study of the skeleton showed that this was an error, as the malar bone was not involved, and there was no hyperostosis. The superior maxilla was massive. The face was distended by a bulging of the maxillary sinus; in fact all the sinuses of the bones of the cranium were greatly dilated. The inferior maxilla exhibited in a high degree the characteristic deformity.

CHOREA.

W. P. HERRINGHAM (*Brit. Med. Journ.*, January 12, 1889, 75) has made a study of the antecedents, family history, state of the heart, and subsequent history of 80 cases of chorea. An antecedent history of rheumatism could be traced in 37 cases. Injury, shock, or a violent burst of emotion preceded the attack in 6 cases, the interval being never longer than two days. Hard mental work or worry was found in 20 cases. In 25 cases none of these causes could be traced, and 14 of these were instances of first attacks. Nearly all the patients were delicate, and headache and indigestion were common. The study of the family history (calculated from parents, brothers, and sisters

only) showed that rheumatic fever had occurred in 25 out of the 75 families, and that 17 of these belonged to 34 patients, themselves of the rheumatic class. Chorea had occurred in 12 families, 9 of whom were also rheumatic. The heart was normal in 10 cases, possibly diseased in 25, and certainly so in 20. Signs of cardiac disease developed during observation in 11 cases, and signs which were at first present vanished under observation in 4 cases. After an interval of 2 years or more 5 of these 11 cases were re-examined, and of these the hearts of 2 were normal, while in 3 that organ gave clear signs of disease. Of the 25 cases whose hearts were possibly diseased, 2 had become healthy, and 7 appeared certainly affected. The author concludes: 1. That a large number of choreic patients are liable to rheumatism. 2. That choreic patients are nearly always of a delicate constitution. 3. That chorea is sometimes directly caused by emotion. 4. That chorea might cause permanent heart disease. 5. That it also gives rise to signs of heart disease which are not permanent.

A. E. GARROD (*ibid.*) has studied the relation of chorea to rheumatism, basing his observations on 80 cases of chorea, 49 of whom were suffering from first attacks. There was a history of rheumatism in the families of 32 patients, and it is to be noted that the tendency to chorea was far more marked in some of these rheumatic families than in others. The number of cases in which there had been manifestations of rheumatism other than endocarditis was 36. There were cases which had had no family or personal history of any manifestation of rheumatism, and which yet were proved to be of rheumatic origin. Such were rheumatic patients who had previously suffered from chorea, or those in which erythema nodosum and arthritis developed in the course of an apparently non-rheumatic chorea, or where chorea was associated with pericarditis or with endocarditis and nodules without joint pains. In 15 cases the onset was ascribed to fright, but inquiry showed that in some of these the fright followed the development of the chorea. In 45 cases a definite heart-murmur was heard, and in 6 others the first sound was "murmurish." In some instances the murmurs developed under observation. The author is of the opinion that the endocarditis of chorea is probably always of rheumatic origin, but there is no ground to believe that chorea itself is always of rheumatic origin, a considerable number of cases being probably due to emotional and other causes.

THE TREATMENT OF FRIEDREICH'S ATAXIA BY SUSPENSION.

P. BLOCQ (*Rev. gén. de Clin. et de Méd.*, February 14, 1905) describes the method of treatment of locomotor ataxia by suspension, and the cause of its discovery by Motchoukowsky. He also speaks of the great success which the method has attained in the hands of Charcot, and finally reports the improvement which has taken place in one of his own cases of Friedreich's ataxia. This case he reported in May, 1888, in *France Médicale*. In February of that year the patient, a girl of sixteen years, exhibited scoliosis with the convexity to the left, scanning speech, ataxia of the head, and nystagmus. There was manifest ataxia of the upper extremities, and she was unable to carry a spoon to the mouth when the eyes were shut, or to touch the finger to the nose; could not learn to play the piano, and her handwriting was very wavering. The inferior extremities exhibited talipes equino-varus. There was incoördina-

tion of voluntary movements, and particularly of the gait, the feet being thrown out sidewise, the heels striking the ground and the legs entangling each other. She could not hold herself upright when the eyes were shut, and was unable to stoop. The tendon reflexes were abolished, and there was amenorrhœa.

In October, 1888, treatment by suspension was commenced, the patient being suspended for one-half to three minutes two or three times a week. Improvement, especially in the gait, was apparent by the second week. When examined in February, 1889, her state was as follows: Scoliosis concealed by a plaster jacket; static ataxia of the head more marked; nystagmus and scanning speech unchanged. There was very little incoördination of the upper limbs, and the patient was able to carry her finger to her nose, a spoon to her mouth, to take lessons on the piano, and to write steadily. The talipes remained the same, but the incoördination of gait was surprisingly improved. She could hold herself upright with her eyes shut, and was able to stoop. The tendon reflexes were still absent, but her menses had been regular for two months. As Charcot remarked with reference to this case, these results are certainly worthy of consideration in an affection which always gets slowly and steadily worse, and always ends fatally.

ANEURISM OF AN ANOMALOUS ARTERY CAUSING ANTERO-POSTERIOR DIVISION OF THE OPTIC CHIASM, AND PRODUCING BITEMPORAL HEMI-ANOPSIA.

S. WEIR MITCHELL (*Journ. Nerv. and Ment. Diseases*, January, 1889) reports the following interesting case of this condition: The patient, a large, healthy-looking man, of forty-three years, had for a year complained of varying but gradually increasing pain in the parietal and vertex regions, which at times darted through one or both temples. Excessive exertion would increase it or bring it on. He had also recently felt easily fatigued, and the legs and arms became easily numb when asleep or from malposition when awake. Three years ago, during very hot weather, he suddenly became weak in the legs, fell, did not lose consciousness, but dragged his foot for a few hours afterward. Examination of the patient, in May, 1885, revealed nothing of importance wrong, except with the eyes. The study of these, made by Prof. Wm. Thomson, showed diminution of the acuteness of vision, slight atrophy of both papillæ, especially the left; no evidence of present or previous choke-disk, and sharply defined and complete bitemporal hemianopsia. The patient was seen at intervals during two years. During this time the papillæ became more white, the hemianopsia remained the same, the headaches were unaltered, the intellect was normal, though once or twice there had been some passing confusion of mind. His death occurred from a sudden onset of coma, lasting but twenty-four hours. The autopsy revealed an aneurism, pyriform in shape and larger than an egg, projecting upward from the sella Turcica, and separating the optic nerves by fully one inch. A separation seemed to have taken place in the centre of the optic commissure, pushing the optic nerves and tracts to the outside of the tumor. The commissure could not be found. The right and left internal carotids were found intimately connected with and apparently forming the tumor. The aneurism had caused

absorption of the olivary process and the optic grove as far as its anterior border, and was firmly attached to the bone.

It seems needful to suppose, Mitchell says, that an anomalous artery connected the carotids by passing under the chiasm. This branch became aneurismal, and, enlarging, lifted the chiasm until this parted in the middle line, leaving a nerve on each side, thus dividing the right and left fibres, which, crossing in the chiasm, supply the nasal sides—the temporal visual fields of each eye. The absence of optic neuro-retinitis is a notable fact, and that the presence of a pulsating mass, as large as a lemon, caused so little disturbance of mind or of motor or sensory functions is interesting.

In order to throw additional light upon this case, Dr. Dercum has appended to the paper a collection of anomalies of the circle of Willis.

EMPHYEMA IN CHILDREN TREATED BY RESECTION OF RIB AND INJECTION OF IODOFORM EMULSION.

BLAKE (*Lancet*, February 16, 1889) reports six cases of empyema, all treated by resection of a portion of a rib, the removal of the flaky organized lymph with a sharp spoon, and the injection of four ounces of iodoform emulsion, three ounces of which were allowed to run out again. In all the cases the wound healed within sixteen days. The author has little doubt that the iodoform emulsion materially hastened the healing process.

A CASE OF ULCERATIVE ENDOCARDITIS LIMITED TO THE TRICUSPID VALVE.

JOHN TRUMBULL (*N. Y. Med. Record*, January 26, 1889) describes a case in a man who had for eight or more days suffered from chills, fever, headache, weakness, anorexia, and diarrhœa. While under observation he had repeated attacks of sudden dyspnœa and intense cyanosis, the cause of which could not be discovered. Physical examination revealed dulness at both bases, with absence of voice sounds, and faint but clear respiratory murmur, and a small patch of dulness below the left clavicle. The cardiac dulness was normal, and no distinct murmur could be detected. The liver and spleen were considerably enlarged. The possibility of the presence of typhoid fever, pulmonary thrombosis, acute double pleuro-pneumonia, intermittent fever, or acute miliary tuberculosis, was entertained, but there were sufficient reasons to exclude all of these, and the author made the diagnosis of ulcerative degeneration of the right side of the heart, in spite of the absence of murmur. He based this diagnosis on the repeated chills, the cyanosis, due, probably, to repeated minute embolic processes in the lungs, the patch of pulmonary consolidation noted in the left lung in front, fluid in the pleural cavities, the enlarged spleen and liver, and the presence of albumin in the urine. The patient steadily grew worse; the amount of fluid in the chest increased and was aspirated, the temperature chart continued very irregular, there were frequent chills, great dyspnœa, and finally œdema and hemorrhagic extravasations, and death. The autopsy showed pleural effusion, multiple purulent foci, and a few hemorrhagic infarcts in the lungs and kidneys, and great enlargement of the liver and spleen. The condition of the heart was very

interesting. There was no enlargement of the organ, and the left chambers, with their valves, were normal. On opening the right auricle so as to look down on the tricuspid valve, there were seen two crumbling masses of vegetation, three-quarters of an inch long and one-half inch high, flattened from side to side, looking upward toward the auricle, and separating somewhat toward the remaining valve. This valve was unaffected, except for ulcerated points where closure made pressure against the verrucose growths.

The case is interesting, not only from its rarity and the absence of auscultatory symptoms pointing to disease of the heart, but on account of its obscure etiology. There had been no antecedent rheumatism, no valvular disease, no trauma, no previous illness, no urethritis, and the patient was a seafaring man, breathing the purest air.

PROGRESSIVE MUSCULAR DYSTROPHIES.

Under this title SACHS in a very valuable paper (*N. Y. Medical Journal*, Dec. 15, 1888) includes those forms of disease in which a primary progressive wasting of some or all of the muscles of the body is the most characteristic feature, and in which the wasting (atrophy) may or may not be associated with true pseudo-hypertrophy of some of the muscles. Though these primary muscular dystrophies are the chief subject of his discussion, he first devotes considerable attention to typical spinal muscular atrophy, since a very large number of cases of the peripheral type as well as of different spinal forms were once classed under this term.

The author next considers in order and in detail the different forms of primary muscular atrophy, reviewing thoroughly the literature of the subject, quoting cases from his own experience and that of others, and describing the histological conditions and differences as far as known. He ends his paper with the following conclusions:

1. Progressive muscular atrophy, type Aran-Duchenne, is due to spinal cord disease. The peroneal type of progressive muscular atrophy bears close resemblance to this form and may possibly have a similar pathology.

2. Duchenne's type of progressive muscular atrophy might be termed the hand type, while the peroneal form would represent the leg type.

3. Pseudo-hypertrophy is not of spinal origin. Lipomatosis is a mere incident in the course of the disease and is associated with widespread atrophy in various parts of the body.

4. There is a close relationship between pseudo-hypertrophy and Erb's juvenile form of progressive muscular atrophy, but not an absolute identity. This close relationship is marked by the onset of the diseases at an early age, by the entire absence of fibrillar contractions in both forms, by the absence of reaction of degeneration, and by the occurrence of lipomatosis some time during the course of the disease. They differ from each other in the distribution of the muscular atrophy, and possibly in the histological changes in the affected muscles.

5. Hereditary muscular atrophy does not deserve the rank of a separate clinical entity, all forms of primary myopathies being occasionally hereditary.

6. The type of Landouzy and D  j  rine is closely related to Erb's form, the

additional involvement of the face muscles not being sufficient basis for a wide clinical differentiation.

7. Pseudo-hypertrophy and Erb's form should be regarded as the two representative forms of primary progressive dystrophies.

8. Primary progressive dystrophies are distinguished from spinal progressive dystrophies by their cardinal symptoms, the onset at an early age, the occurrence of true or false hypertrophy, the absence of the reaction of degeneration, and the absence of fibrillar contractions.

As the term "progressive muscular atrophy" has been widely used as a general title, the author substitutes for it Erb's designation "spinal progressive amyotrophia."

Believing that the anatomical distribution of atrophies or hypertrophies does not form a sufficient basis for classification, he would reduce the classification to the following simple form:

1. Amyotrophia spinalis progressiva:

a. Hand type;

b. Leg type—peroneal form.

2. Primary progressive dystrophies:

a. Pseudo-hypertrophy;

b. Erb's form.

The description of the exact anatomical distribution of the cases under Class 2 may be left to the individual author.

SURGERY.

UNDER THE CHARGE OF

J. WILLIAM WHITE, M.D.,

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THE PRESENT ASPECT OF THE IODOFORM QUESTION.

DR. W. W. v. ARSDALE (*Annals of Surgery*, March, 1889) states his belief that the evidence now before us points to the conclusion that iodoform by attacking the products of bacteria can be of great practical value as a surgical dressing, as we need only to adopt the view that microorganisms introduced into the tissues could be successfully combated by the vital action of the latter, perchance by the leucocytes and the phagocytes, unless the bacteria were assisted in their work by the ptomaines, upon which the iodoform may, and probably does, exert a destructive action. This, however, is as yet merely theory, but some proper conclusions may undoubtedly be deduced from the mass of experimental evidence which is now available.

Since we know that iodoform may contain germs, we should sterilize it before use; this may be done by washing it in sublimate solution. If applied

with a brush to a wound the brush should not be used again. A powder-blower for iodoform should be used in a pure atmosphere only. We will not look for the action of iodoform at a distance, an action throughout a wound when only a portion of it is in contact with the powder, nor at the depth of a wound when only the surface is covered with iodoformized gauze. We will not use iodoform during a primary operation in uninfected tissues, since we know that septic infection will not be counteracted by the simultaneous application of iodoform. But we will esteem iodoform for its action in preventing the subsequent infection of wounds, both during the change of dressings and in case of accidental exposure. We shall continue to use it sparingly in granulating wounds, as we cannot dispense with its property of favorably influencing the granulations, always taking care in suppurating wounds to prevent retention by adding protective over the iodoform. In wounds already septic we may use iodoform as extensively as possible, endeavoring to bring the powder into contact with every part infected. We shall not expect it to influence already existing septicæmia or pyæmia.

The greatest benefit will be derived from iodoform by its use in operations about the mouth, vagina, and rectum, where, owing to its property of destroying the ptomaines, it acts as a powerful deodorizer. For the same reason its use on putrid surfaces is to be recommended.

On the other hand, the poisonous qualities of the drug, its disagreeable odor, its irritating effect, when suspended in the air, on the mucous membranes of the eyes and nose, prevent its extended use; and since we have found in tartaric and other vegetable acids a means of rendering our sublimate solutions more active upon albuminous liquids, and in creolin (in strong solutions, 5 per cent.) a means of keeping granulations in good condition, we are able to dispense with iodoform in all but its influence against the ptomaines, which is of so much practical value to us in our treatment of wounds of mucous membranes, and which cannot be sufficiently replaced by chlorine solutions or charcoal powder.

PURPURA AND MALIGNANT GROWTHS.

DR. THOMAS HARRIS (*The Medical Chronicle*, February, 1889) quotes the six well-known cases of Dr. Hilton Fagge of multiple sarcomata associated with hemorrhages into the skin and other parts, and then gives in detail the results of the autopsies on three cases of mediastinal lymphosarcoma associated with petechial hemorrhages into the skin, stomach, intestine, peritoneum, and pericardium. His observations in these cases and his review of the pathology of purpura lead him to the belief that embolism of small vessels is the most common cause of the purpura and other forms of hemorrhage which come on in cases of malignant growths.

SYMMETRICAL GANGRENE.

MR. JOSEPH COLLIER reports (*Medical Chronicle*, February, 1889) an interesting case of Raynaud's disease occurring in a woman twenty years of age, and accompanied with severe abdominal pain, pain in the extremities, pain and numbness in all the fingers and toes, gangrene of the three inner toes of the left foot, and paroxysms during which the hands and feet became white.

semi-transparent, cold, and anæsthetic. At the end of two months she died. At the autopsy there were found eight ounces of pus lying in the neighborhood of the cœliac axis. There was peritonitis especially well marked in the region of the solar plexus, and it was thought probable that the irritation of the great abdominal sympathetic system was the cause of the arterial spasm which determined the paroxysmal symptoms in the extremities and the gangrene of the left toes.

Considered from the point of causation, these cases of this well-marked disease seem to fall into one of several groups:

(1) Those due to direct stimulation of the peripheric ganglia. In this group are the cases with gangrene dependent on vascular spasm, produced by some altered condition of the blood. Of course, in these cases the production of gangrene will be partly due to malnutrition of tissue, and partly to the action of the blood on higher cerebro-spinal centres, as in cases of paroxysmal hæmoglobinuria.

The gangrene of Bright's disease and of diabetes mellitus will be, to some extent, produced in this manner. The vaso-motor symptoms in alcoholic paralysis are probably also due to the circulation of impure blood.

(2) Those due to irritation of prevertebral sympathetic ganglia, or vaso-motor nerves leaving them, as in the case recorded above. Probably pathological conditions of the large abdominal sympathetic ganglia are much commoner than is usually suspected, especially in anæmic girls of the age generally attacked by Raynaud's disease.

(3) Those due to irritation of central origin, as in a case of gangrene of the left hand recorded by Hochenegg, where chronic hydrocephalus and syringomyelia were found at the post-mortem. Cases more or less due to emotional origin would come into this group.

(4) Those due to some peripheral stimulation acting reflexly through cerebro-spinal centres. Thus cutaneous sensory nerves irritated by cold, or, in cases of symmetrical gangrene, from scleroderma. Here, again, part of the action of peripheral neuritis in producing arterial spasm will be produced in this manner.

In the cases of the disease associated with syphilis, congenital or acquired, it is difficult to be positive that endarteritis, or some other arterial degeneration, has not been the main cause.

CURABILITY AND TREATMENT OF SYPHILIS.

In concluding his admirable lectures upon syphilis and the nervous system DR. W. R. GOWERS states (*British Medical Journal*, February 16, 1889) his beliefs as to some important matters as to which there is still much difference of opinion in the profession. He says there is no real evidence that syphilis ever is or ever has been cured, the word syphilis being used here to designate that which causes the various manifestations of the malady. The assertion that "syphilis is an incurable disease" is the shortest way to state this fact, and is legitimate if we recognize that by "incurable" we merely mean that there is no proof of cure. The conclusion that the essential element in the disease resists treatment, and runs its course uninfluenced by our efforts, is in harmony with what we know of other specific diseases due to a poison intro-

duced from without, and communicable from one person to another. There is not any fact whatever to show that a single disease of this kind can be cut short. The course of the acute exanthemata cannot be arrested by any means at our disposal at any stage of their course, and the same seems true of this chronic exanthematous disease. This is eminently true, also, of the disease that stands perhaps nearer to syphilis than any other known malady—leprosy.

He believes that the iodides are effective in themselves, and do not act merely by bringing into activity the mercury which may have been deposited and held inert in the various tissues; that there are probably late syphilitic lesions over which the iodide has no influence and which yield to mercury, although he had seen no case of intracranial disease in which there was reason to believe that mercury was successful when the iodide had failed. He prefers the employment of mercury by inunction, and says wisely that he has been deterred from trying the hypodermatic method because published evidence did not afford satisfactory proof of superiority, "and because this method seems to afford an opportunity for psychical influence not free from risk of that which is undesirable." He prefers interrupted courses of treatment, which should be energetic but should continue only a little longer than is necessary to remove the lesion; being repeated, it may be, after an interval occupied by tonic treatment, or by the other of the two chief drugs. He adds: "If it is true that we cannot cure syphilis, it is most important to consider how it can be best kept in check. This is why the fact of incurability, if true, is so important. A mistaken belief in curability may dangerously hinder attempts at prevention. If no present treatment can prevent future developments, then it is wise, whether these come or not, to anticipate them. I think a custom, sometimes recommended, is prudent, that every syphilitic subject, for at least five years after the date of his last symptoms, should have a three weeks' course of treatment twice every year, taking, for that time, twenty or thirty grains of iodide a day. If this practice were adopted generally, is it not reasonable to anticipate grave lesions would be much more rare?"

Dr. Gowers' opinions are always worthy of careful and respectful consideration, but those expressed here in reference to the essential incurability of syphilis, and in regard to the employment of interrupted courses of treatment are so important and, at the same time, so much at variance with those of many distinguished syphilographers, that it seems right to suggest that possibly they are the result of an experience which deals chiefly with the later, the graver, and the most intractable forms of the disease, namely, those affecting the great nerve centres, and which does not give the neurologist the opportunity of following the course of the case from the primary stage through many subsequent years, as constantly happens in the work of both the syphilographer and the general practitioner. They should not be considered as decisive, nor does Dr. Gowers himself seem so to regard them, as they are most modestly advanced.

EARLY STAPHYLOREPHAPHY.

An interesting case of cleft palate and harelip was reported by DR. JULIUS WOLFF, at the last meeting of the German Surgical Congress (*Archiv für klinische Chirurgie*, Band xxxviii., 1888). The case was a most severe one;

the opening in the upper lip was very wide, the edges being fully a half inch apart from each other; the alveolar process, as well as the velum and uvula, was completely divided. Two days after the birth of the child Wolff operated upon the harelip, and a little later transplanted the left wing of the nose, which had been drawn to one side by the harelip, to its natural position. This gave both nostrils a normal appearance. When the child was five months old the uranoplastic operation and staphylorrhaphy were performed. The wounds healed well and by first intention. Complete recovery soon followed.

Wolff argues that the mortality attending operations of cleft palate in young children would be considerably lessened if the operation were performed when the child was a few months old; if greater care were taken to avoid even the slightest hemorrhage; and if the operation were done in successive stages, performing one portion of it on one day and waiting from five to eight days before performing the next. The child in question had had no less than six operations. During the entire treatment there was no fever, nor any loss of appetite.

In conclusion, Wolff says that in operating by this gradual method the probabilities of healing by first intention are greatly increased.

BLOODLESS EXTIRPATION OF TUMORS OF THE THYROID.

PROF. BOSE (*Centralblatt für Chirurgie*, January 5, 1889) recommends in these cases an incision beginning over the lower portion of the lateral lobe and running outward and upward toward the angle of the lower jaw. The tissues are divided down to the capsule. The circumjacent connective tissue is separated with the finger. The tumor is pulled upward out of the wound as far as possible, a position which greatly lessens the amount of blood which it contains. An elastic cord is then passed around it and tightened, after which the diseased nodules are dissected or scraped out, the ligature being strongly pulled upon during this proceeding, and finally embracing the pedicle, which often consists of healthy tissue. In Bose's cases no hemorrhage followed the removal of the ligature and the wound cavity did not require to be packed. In those cases in which the tumor has penetrated to the post-sternal or post-tracheal region and has contracted firm adhesions, this method is inapplicable.

SUCCESSFUL EXTRACTION OF A TOOTH-BRUSH FROM THE STOMACH.

DR. HASHIMOTO, Surgeon-General of the Imperial Japanese Army, reports (*Archiv für klinische Chirurgie*, Band xxxviii., 1888) a case of a woman forty-nine years of age, who, for the purpose of emptying her stomach, was in the habit of irritating the fauces and pharynx with a Japanese tooth-brush, a wooden instrument six or seven inches in length, one-fourth of an inch in breadth, and with bristles at one end. In May, 1872, during this manipulation, she swallowed the tooth-brush. This was followed by severe pain in the epigastrium and some fever, but these symptoms after a time lessened. Eleven months later pain returned, a fluctuating swelling appeared in the epigastric region which opened spontaneously, the pointed end of the tooth-brush protruding through the opening. The attending physician endeavored

unsuccessfully to extract it, and, finally, contented himself with cutting off the projecting portion, leaving the remainder. The wound healed, leaving only a disagreeable sensation as of the presence of a foreign body.

At the end of August, 1886, the pain and swelling reappeared, this time in the neighborhood of the umbilicus, followed, in a couple of months, by the formation of another abscess, which also discharged. In November, 1888, several fistulous openings existed in the neighborhood of the umbilicus, through one of which the probe could be readily brought in contact with the foreign body. The fistula was enlarged, the foreign body seized with forceps, and after considerable difficulty extracted. Its removal was accompanied by an audible escape of odorless gas; the wound was stitched together and dressed antiseptically. The discharges which appeared were found to have become strongly acid. This fact, together with the escape of gas, indicated the existence of a gastric fistula. This, however, gradually diminished until at the end of the fifth week the wound was entirely healed, the patient having had no alarming symptoms. Dr. Hashimoto compares with this the history of another patient who had swallowed a tooth-brush precisely similar in size and shape in 1879, and who was operated upon a week later. In this case the opening in the stomach was exposed, and as the edges were found to be necrotic, the wound was excised and stitched together by Lembert's sutures. The patient died three days later. Dr. Hashimoto contrasts the early and late operations, and quotes some statistics to show the great mortality of the former.

ABDOMINAL SECTION FOR ACUTE INTUSSUSCEPTION IN A CHILD THREE YEARS OF AGE.

PROF. THOMAS ANNANDALE reports (*The Edinburgh Medical Journal*, March, 1889) a case of a child admitted to the hospital with marked symptoms of intussusception, vomiting, bloody passages, etc., and with an elongated tumor in the left lumbar region which could also be felt through the rectum. Small doses of opium, enemata, and the use of rectal bougies having failed to reduce the invagination the abdomen was opened and gentle traction was made on the intestine above the tumor, which suddenly disappeared. The patient recovered without a complication. Mr. Annandale emphasizes the importance of early operation in such cases when other means have failed to relieve the condition.

It is true that in a small number of cases of intussusception (about six per cent. in patients between the ages of two and five years, according to Leichtenstern) spontaneous elimination by gangrene of the gut takes place, but a certain proportion of such cases do not ultimately recover, but die from causes in connection with the intestinal condition; and, therefore, it must be considered that, unless an acute intussusception is relieved in the early stages of the case, it is, especially in young children, a very fatal disease.

The treatment of this affection by enemata or insufflation can only be successful in its early stages, although a few exceptional cases have been recorded; and it should always be remembered that in the later stages this treatment is attended with considerable risks.

A further observation of importance in connection with operative interfer-

ence in cases of intussusception is, that reduction of the invagination is, in the majority of instances, more easily accomplished when the operation is performed during the early stages of the condition; and Mr. Treves has shown in his tables of statistics that the easier the reduction the less the mortality; when the reduction is easy the mortality being 30 per cent.; and when difficult or impossible, 91.3 per cent. An additional advantage of an early operation is that, in the majority of cases, a limited abdominal incision, with a limited amount of interference with the abdominal contents, will be sufficient to relieve the condition.

TREATMENT OF GANGRENOUS HERNIA.

DR. FERDINAND KLAUSSNER (*Münchener medicinische Wochenschrift*, February 6, 1889) reports fourteen cases of resection of the bowel in gangrenous hernia; seven of which resulted in recovery. In six of these normal action of the bowels was restored, and in one a fistula was formed. In the fatal cases death resulted, with one exception, from collapse. We quote one case, which will show Klaussner's *modus operandi*.

The patient was a well-built woman, suffering from a strangulated umbilical hernia about the size of a hen's-egg, and of three days' standing. Taxis was tried without avail. The surrounding skin was of a greenish hue. A superficial incision was made five inches long, and the underlying tissues were cut through on a grooved director. A discolored and fetid portion of the mesentery and a loop of the bowel, also discolored, were then laid bare. The strangulating tissues, which were very tense, were cut through and the bowel drawn forward. The opening of the abdominal cavity was then closed by means of a compress of bichloride gauze. The gangrenous portions of the bowel and mesentery were then resected, one and two-thirds inches of healthy tissue being included on either side. The entire portion resected measured fourteen inches. The edges of the mesentery were now brought together with a row of interrupted sutures, then the peritoneal surfaces with additional sutures. The bowel itself was united first by a row of sutures in the mucous membrane, and a second row in the serosa. For this the finest silk was used. The bowel was then washed with a solution of bichloride, 1 : 3000, and dusted with iodoform, then replaced in the abdominal cavity; the peritoneum was closed with catgut sutures, and finally, the skin was brought together with strong silk sutures after the gangrenous portions had been cut away. The lower extremity of the wound was left open for drainage. An antiseptic dressing was then applied. The wound healed well, there was no fever, and in three weeks the patient was discharged as cured.

SUPRA-PUBIC LITHOTOMY.

DR. ROBERT F. WEIR reports (*The Medical Record*, March 9, 1889) a case of phosphatic calculus removed by supra-pubic section from a man seventy-nine years of age. The special points of interest were these: 1. The successful result of a cutting operation at an advanced age. 2. The ease with which, by a clawing or rake-like action of the fingers the subperitoneal fat may be drawn upward from behind the pubis, after a splitting of the recti muscles in the median line, thus quickly and safely exposing the bladder without hemor-

rhage. 3. The use of a drainage tube with lateral decubitus for three days, the opening in the bladder closing in twelve days. 4. The occurrence of iodoform mania as a result of packing the wound with a ten per cent. gauze.

ABDOMINAL ACTINOMYCOSIS.

DR. MIKULICZ reports (*Berliner klinische Wochenschrift*, Feb. 11, 1889) 5 cases of abdominal actinomycosis occurring in his clinic at the Königsberg Hospital.

The last one was that of a young man, aged nineteen years, who, about a year since, had discovered a swelling to the right of his navel, which rapidly grew larger, and finally burst open. He was treated for seven months at a provincial hospital in Russia without avail, and was subsequently brought to Königsberg. Dr. Mikulicz found the patient in a poorly nourished condition and very weak. The tumor was as large as a child's head, of a reddish color, and covered with small granulating patches, varying in size from that of a pea to a bean. On pressure these patches secreted a fetid pus containing numerous granules. These granules were found to be actinomycotic. The entire growth was removed. The external oblique muscle was found to be infiltrated with a yellowish substance, which was scraped out, and was found to be of the same character. The wound was dressed antiseptically, and in eight weeks the patient left the hospital cured.

NEPHRORRHAPHY.

FRANK (*Berlin. klin. Woch.*, No. 9, 1889) vigorously defends nephrorrhaphy as a justifiable and, in its issue, satisfactory operative procedure in case of wandering kidney. As contrasted with nephrectomy, out of fifty-six operations, but two died; while of seventy cases of extirpation, twenty-seven terminated fatally.

The operation, with few exceptions, has been performed by the lumbar incision. The thread should under all circumstances embrace not only the true capsule of the kidney, but also the parenchyma of the organ. The organ should be fixed to the wound by its whole posterior surface, and in its normal axis. Of the two fatal cases, one occurred at the hands of Cecherelli, who passed his fixation threads about the twelfth rib. On section, a fatty heart, diseased arteries, and pleuritic effusion were found. The other fatal case occurred in the practice of Hahn. The symptoms strongly suggested ileus, but as there was a movable kidney, it was sutured in place. Death occurred two days later without amelioration of symptoms.

Of 39 cases, there was complete disappearance of all symptoms in 21, great improvement in 9, moderate improvement in 2, and no improvement in 7. It is to be remarked that in some cases where absolute fixation was secured, the symptoms were not materially bettered, while in other cases, where there was partial fixation only, there was possibly complete relief. In 4 cases, where fatty capsule was sutured to the wound, the kidney became again freely movable in every case with return of all the symptoms. In 11 cases, where the threads were passed through the parenchyma of the kidney, the organ was firmly fixed in 10, very slightly movable in 1. Of these 11

cases, 9 were permanently cured; 2 were greatly relieved. In 4 cases, where nephrorrhaphy was not successful, a subsequent nephrotomy was performed, the patients all recovering.

After operation the dorsal decubitus should be preserved for several weeks, till the kidney is firmly anchored by a well-formed cicatrix. As for the operative indications, when a movable kidney is excessively painful and causes serious impairment to health, all other therapeutic measures failing, nephrorrhaphy should be performed. If this in turn proves unsuccessful, the surgeon should, as a last means, resort to nephrectomy.

THE WIRE SUTURE IN OLD FRACTURES OF THE PATELLA.

MR. G. R. TURNER reports (*Lancet*, February 23, 1889) a successful case of wiring of an old patellar fracture, in which recovery was finally perfect in spite of an extensive separation of the soft parts which occurred when movement was begun.

We have from time to time published cases in which primary suture of the patella after simple fracture has proved successful, and recorded the opinion of many eminent authorities in favor of it; but, whilst the percentage of deaths on the showing of one of the strongest advocates for its employment amounts to 1.4, and the treatment by apparatus involves no risk—even bony union is occasionally obtained—operative measures will be resorted to with reluctance by the majority. There are certainly some which would do better under operative treatment, but no definite rule for the guidance of the surgeon can be drawn from a comparison of the published cases. When, as in this case, the limb is comparatively useless, should the operation be performed? To this the answer will usually be in the affirmative. But what are the results of treatment as compared even with those of recent suture. Söderberg collected statistics of 81 cases; 41 of these were operated upon by primary suture; in 37 there was a good result, in one ankylosis followed suppuration, in 3 only partial mobility was obtained, and in 1 fibrous union; 38 were cases of long-standing fracture, in which the result obtained by other methods was considered unsatisfactory; in 14 there was a good result, in 8 ankylosis resulted, whilst in 3 the operation was followed by death. The mortality, therefore, is high. This is confirmed by the statistics of Valaguier on the operation in old cases. Out of 45 operations, 22 were successful; in 9 there was partial ankylosis; in 11 complete ankylosis (in 10 of these the joint suppurated); 3 died.

Success or failure will much depend upon the selection of cases, both as regards condition of limb and the presence of any constitutional disease or deterioration of general health—as from addiction to alcohol.

It is not that sufficient care is not taken in the use of antiseptics, some of the most careful in this respect having had untoward results. In some it has been found almost impossible to bring together the fragments owing to contraction of the quadriceps muscle, which it has been necessary to divide in order to obtain success. Von Bergmann, in one instance, did not divide this muscle, but chiselled off the tubercle of the tibia, and then united the fragments, with good result. A vertical incision over the centre of the joint is usually employed in this country, though the fragments have been sutured through a transverse incision. In some cases no drainage has been used, the

object being to obtain primary union throughout. Mr. Turner recorded a case in which the wires required removal some months after the operation, having been the cause of recent suppuration in the joint. They are, however, commonly left and rarely produce inconvenience. Ceci crosses the wires obliquely, passing them through lateral incisions.

COMPRESSION OR LIGATION OF THE COMMON CAROTID ARTERY IN THE IMMEDIATE TREATMENT OF APOPLEXY.

MR. WALTER G. SPENCER and MR. VICTOR HORSLEY (*British Medical Journal*, March 2, 1889) suggest that in those cases of hemorrhage from the middle cerebral artery in which the hemorrhage continues for a longer or a shorter time, or, in other words, in those in which it is not so large that death immediately ensues, nor so small that it ceases immediately, the common carotid shall be at once compressed against the vertebræ, or that when there are time and opportunity it might be exposed, and a stout ligature passed around it by which the vessel should be exactly compressed by drawing it up against the fingers, without, at the same time, exerting any unfavorable pressure on the veins and nerves. This should be done with two precautions: The wound must be kept aseptic and the internal coat of the vessel should not be injured. At present the mode of "treatment" is by position—that is, raising the patient into a half-sitting posture—but, while this lessens the flow of blood to the bleeding vessel, it is also lessened in the same proportion to the rest of the brain, which, at this time, needs its full circulation, both in the areas around the injury, so that the arterial flow should meet with greater resistance as the compression begins to involve those areas, and also because the full supply is needed in the respiratory centre to keep it at work. Venesection has been employed, but while it diminishes the circulation in the brain as a whole, it has no effect upon the rapidity of coagulation, for, if an animal be bled to death, it is only the last blood which flows that coagulates more quickly. From this point of view, therefore, it offers no advantage to the patient. The authors believe that the greater frequency of hemorrhage from the lenticulo-striate and other basal branches of the middle cerebral is due to the fact that they are exposed to the direct force of the stream from the external carotid, which is not the case with the other cerebral arteries. Experiments upon monkeys lead them to believe that in such cases ligating the common carotid, while not adding materially to the risk of life, might permanently diminish the intra-vascular tension and save the diseased vessel-wall from renewed strain in the future. Their paper rests on a threefold basis, anatomical, pathological, and experimental, and they express the desire that the treatment which they propose may have the benefit of critical examination at the hands of the profession.

ARTHRODESIS.

DR. HERMANN EURINGER (*Münchener medicinische Wochenschrift*, February 5, 1889) gives the result of his investigations into the history of arthrodesis, and cites a number of cases. The operation was performed by Dr. Louis Bauer, of New York, as long ago as 1860. The case was one of traumatic separation of the epiphyses of the lower end of the femur which had caused

a deformity resembling genu-valgum. The external condyle was entirely gone and the internal one was greatly enlarged. The lower part of the leg could be rotated so that the calf would be entirely turned around to the front. Bauer excised the joint and fastened the bones together with iron wire. Complete ankylosis of the joint resulted, and in one month the patient was able to walk well.

Euringer cites fifty cases and sixty-nine operations. Arthrodesis was most frequently performed in cases of poliomyelitis, also in club- and flat-foot, when these were accompanied by paralysis. For this Zinsmeister suggests arthrodesis of the talo-navicular or of the talo-crural joint. Wolff was the first to apply this operation to myopathic and habitual luxations. His first case resulted in the cure of an habitual luxation of the humerus by causing a union of the ligaments, and thus fixing the head of the bone firmly in its place. The same operation was performed also by Albert and others with success.

In one of Euringer's cases arthrodesis was performed upon both hip-joints, causing complete ankylosis, and in six months the patient was able to walk well with only the assistance of a cane.

GANGRENE OF THE LOWER EXTREMITIES FOLLOWING A BLOW UPON THE EPIGASTRIUM.

MR. GEORGE CURTIS reports (*British Medical Journal*, February 16, 1889) the case of a man, aged twenty-eight years, who, on July 10th, received a severe blow with a capstan bar on the abdomen. On August 4th he was admitted to the hospital at the Cape of Good Hope suffering from gangrene of the lower extremities, the line of demarcation being well marked in each by an irregular ring from four to six inches above the malleoli, a condition necessitating double amputation from which the patient made a good recovery.

The *rationale* of the process of the gangrene set up simultaneously in both feet after a blow on the abdomen is not self-evident. The man had a rather weak pulse, but the heart-sounds were normal; he was a native of the tropics, entering suddenly into a temperate and comparatively cold climate, and was liable to chilled feet by his occasional occupation—namely, washing clothes on a lead flooring; and these circumstances may have predisposed to blood stagnation of the extremities. But the efficient cause of the gangrene was plainly the severe blow on the epigastrium, and the subsequent chain of events seems to have been shock of the sympathetic system, through the sudden contusion of the solar plexus and splanchnic ganglia, etc. (analogous to the concussion of the brain or spinal cord); relapsing syncope of the heart, with general vasomotor paralysis and stasis of blood in the remote vessels. The blockage of the tibial vessels seems to have been too great for the returning circulation, and local death ensued.

THE TRANSPLANTATION OF LARGE STRIPS OF SKIN.

DR. GEORGE R. FOWLER reports (*Annals of Surgery*, March, 1889) a case in which human and frog skin were simultaneously used for the purpose of

covering in the ulcer following a burn. The estimated area of the burnt surface was about two hundred and forty-eight square inches. Five weeks later but little progress had been made toward cicatrization. The surfaces were cleansed and disinfected. The skin from the back and abdomen of a live frog was transferred to the granulations occupying the region of the left buttock. On the right buttock eight strips of human skin were placed after the manner of Thiersch. They were laid in place by strapping with oiled silk and gauze compresses wet with a sterilized salt solution of 6 to 1000. There was a rapid improvement followed by cicatrization, which was almost complete in less than three weeks, but subsequently there was breaking down at several points, evidently the result of pre-sure. The patient was finally discharged cured six months later without the least tendency to contraction of the surface of repair. It was noticeable that a decided fall of temperature followed immediately upon covering in each suppurating and granulating surface. In other words, septic absorption ceased as soon as the actual vital resistance of the tissues was reinforced and the granulations were perfectly protected from atmospheric influences. Dr. Fowler gives detailed instructions for preparing the ulcerated surfaces for the operation, and for the removal of the skin to be employed, as well as for the subsequent dressings.

OTOLOGY.

UNDER THE CHARGE OF

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THE CAUSES OF FURUNCLES, WITH SPECIAL REFERENCE TO THOSE FOUND IN THE EAR.

DR. C. SCHIMMELBUSCH has made some researches in reference to the above-named subject (*Archiv für Ohrenheilkunde*, Bd. 27, February, 1889). Furuncles may be divided into idiopathic and symptomatic, according to some authorities, but the author of the article we are considering endeavors to demonstrate by his experiments that furuncles are due to local infection by means of staphylococci. A review of his microscopic and experimental labors seems to show clearly that furuncles are caused by rubbing staphylococci into the hair follicles of the skin. Two elements must be admitted in the causation of furuncle: *first*, the presence of pyogenic staphylococci in large quantities upon the surface of the skin; and, *second*, some form of rubbing them in.

In regard to the first point, the presence of staphylococci, it is claimed that the dirtiest people are most frequently affected with furunculi, as they are not careful to wash away the infectious spores from the skin when they first land there, and after one boil forms, the discharge from it is not quickly and carefully removed, and hence new boils are formed as successors to the first.

Respecting the second point, rubbing in the spores is shown to be a cause

of furunculi, and it explains the so-called predilection of boils for certain places on the body. The neck, the waist, the buttocks, become readily the seat of boils, because pressure and friction are exerted upon these points by tight-fitting and closely pressed clothing, aided by the motions of the body.

Pustules and furuncles occur at other parts of the body, like the lip, the chin, the eyelids, and ears, because these points are subjected to repeated irritation and rubbing from the patient's hands.

That a tendency to furuncles is manifest in certain cachexiæ, cannot be denied. The same diatheses favor the formation of phlegmons and abscesses, and the conclusion is justifiable that such bodies offer a better soil for the growth of staphylococci. In many cases, however, in which the multiplication of furuncles suggests the thought that some constitutional complaint is the foundation for their occurrence, a closer investigation shows that the inner man is sound, and the treatment of the disease by cleanliness and rest has demonstrated that there were only two factors in the causation of the disease, viz., the presence of the staphylococci on the skin, and their being rubbed into the hair follicles.

PYÆMIA FROM ACUTE OTITIS MEDIA.

REINHARD and LUDEWIG report two cases of pyæmia resulting from acute otitis media (*Archiv für Ohrenheilkunde*, Bd. 27, February, 1889; Report of Ear Clinic in Halle).

The first case, one of otitis media acuta, on the left side, in a man, twenty-four years old, resulted in a secondary inflammation of the mastoid cells, pyæmia, and a metastatic gluteal abscess of enormous size. Recovery ensued in four months. The inflammation of the ear was due to a severe cold and sore throat. In a month from the initial symptoms of cold, the symptoms of the gluteal abscess set in, the ear having been the seat of acute inflammation in the meantime. In four months the patient was discharged from the hospital entirely cured, excepting a persistent perforation in the membrana tympani. In the second case, a man, twenty-five years old, a severe pyæmia followed an acute otitis media. The patient had nearly recovered from the inflammation in his ear when an imprudence in eating induced fever and headache. The mastoid became inflamed, and was trephined. There then ensued a period of three months of fever and light chills at intervals. Great emaciation ensued, and there occurred metastases in both eyes (septic retinitis and multiple retinal hemorrhages) with an abscess in the left shoulder-joint and in the muscles of the upper arm. Finally, recovery of hearing and health occurred in the course of five months from the time of the first angina and otitis media.

TREATMENT OF OTORRHOEA BY MEANS OF POWDERED BORIC ACID.

This article, by DR. MEYER, of Copenhagen (*Annales des Mal. de l'Oreille*, February, 1889), is one setting forth some of the objections to the employment of powdered boric acid in the treatment of otorrhœa. It is, in fact, a review of the *pros* and *cons* of the subject since boric acid was first introduced to otological work by Bezold, of Munich, in 1880. Most of the objections can be traced to the improper use of this valuable antiseptic, though it is doubtful

whether some of the evils attributed to its misuse can be really substantiated, as, for instance, the increase in the frequency of mastoid disease since the introduction of boric acid in the treatment of ear disease.

It can be unhesitatingly and most positively asserted that powdered boric acid should not be used in acute otitis media, nor in chronic suppurations of the tympanic cavity with perforation in the flaccid membrana (membrane of Shrapnell). The same may be said of any other powdered medicament employed in the same aural diseases.

It may, however, be employed with the very best results in cases which have passed the acute stage, with large perforation in the membrana tympani in its inferior part, and in which the discharge is slight, and the mucous membrane smooth. It should always be used in very small quantities.

Dr. Mayer concludes his article by stating that "the surgeon may, with entire safety, treat every chronic otorrhœa with powdered boric acid when there is a free escape for the pus, if he is careful to use only small quantities at a time, and examine his patient daily. Before insufflation of this powder, the ear should be washed out with care, and dried by means of sterilized cotton. This treatment should never be confided to the patient, nor to his attendants; the physician must do it, with the above-named cautions.

LUPUS OF THE MIDDLE AND INTERNAL EAR.

Lupus not uncommonly spreads from the skin of the face to the auricle, but it is very uncommon to find that lupus has passed from the nasopharyngeal mucous membrane, *viâ* the Eustachian tube, to the cavity of the middle ear and thence to the internal ear. A case of this nature, however, is reported by DR. GRADENIGO, of Padua (*Gazetta degli Ospitali*, 1888, and *Annales des Maladies de l'Orille*, February, 1889). The patient was a man, who died of pulmonary tuberculosis, complicated by a profound laryngo-pharyngeal stenosis, and numerous centres of lupus on his face, body, and limbs. The neoplasm had involved the right auricle, the skin and mucous membrane of the nose, the skin of the lips, etc., and the mucous membrane of the vault of the palate, of the velum, the tongue, the larynx, the pharynx, the left Eustachian tube, and the middle and internal ear on the left side. In addition, the mucous membrane of the frontal and sphenoidal sinuses was infiltrated and swollen.

Post-mortem examination revealed entire destruction of the left membrana tympani, and invasion of the mastoid cavity by a neoplasm mostly of round cells. This same tissue extended into both the fenestræ and the internal ear. There was no trace of the malleus; there were portions of the body and long process of the anvil left. The stapes was imbedded in the aforesaid round-cell tissue. Its head was gone, and the connection between it and the incus was destroyed.

The neoplasm had invaded the internal ear in three ways: 1. By the round window. 2. By the oval window. 3. After erosion of the thin osseous wall separating the Fallopian canal from the summit of the external semi-circular canal, the neoplasm had invaded a portion of the perilymphatic space of the latter.

TRAUMATIC RUPTURE OF THE MEMBRANA TYMPANI.

In the report of PROF. SCHWARTZE's clinic at Halle (*Archiv für Ohrenheilkunde*, Bd. 27, February, 1889, p. 297), DRS. REINHARD and LUDEWIG state that traumatic ruptures of the membrana tympani have invariably healed favorably, if promptly brought to them for treatment, and if improper treatment had not been applied. The treatment carried out in the clinic at Halle consisted in the application of an antiseptic tampon (dry) in the meatus of the auditory canal.

The great mistake usually made is in syringing the ear, or dropping some fluid substance into it, as soon as the organ is injured. This too often conveys septic matter into the drum-cavity, whereby the mucous membrane is soon inflamed and otorrhœa established. The wise course to pursue, therefore, is to effect an antiseptic closure of the meatus, best done by iodoform or sublimate gauze, or cotton-wool, in the form of a soft, dry tampon.

 MASSAGE OF THE MIDDLE EAR.

REINHARD and LUDEWIG also report that massage of the middle ear, when the seat of exudation, has been carried out in the Halle clinic with good results. The treatment consists in rubbing downward from the mastoid region to the shoulder, in the course of the chief lymphatics of the neck, for from five to ten minutes daily, morning and evening, with the hand well anointed with an emollient.—*Loc. cit.*, p. 298.

 CREOLIN IN DISEASES OF THE EAR.

In the same report we find that creolin (ten drops to one-half litre of water) has been used with unfavorable results in the Halle clinic, in furunculosis of the auditory canal, otitis externa diffusa, chronic purulent otorrhœa, both as instillation and a wash, by the external ear, and as an injection by the Eustachian catheter, in acute purulent otitis media after paracentesis or spontaneous perforation of the membrana, and in chronic catarrh with exudation, in order to facilitate the removal of the latter, after paracentesis.

In all of these affections no decrease of the discharge nor lessening of the pain was observed. On the contrary, nearly all the patients complained of an intense burning in the middle ear, Eustachian tube, and the nose even when the solution was made in the strength of five drops to one-half litre of water. Furthermore, the patients complained of the disagreeable odor and bitter taste of the drug.—*Loc. cit.*, p. 300.

 SOZOIODOL IN EAR DISEASE.

Soziodol, too, has received a trial in the same clinic, both in powder and in solution. The number of cases in which this drug has been employed is yet too small to permit definite conclusions as to its effects. Soziodol-potassium was used in powder, as insufflation in the ear, and also as an application to the dura mater exposed during the operative opening of the mastoid cavity. An eight per cent. solution was used as an instillation in an offensive suppu-

ration in the ear, but it was not apparent that either the smell or the secretion was essentially affected by the application of the drug.—*Loc. cit.*, p. 301.

EXCISION OF THE MALLEUS.

DRS. REINHARD and LUDEWIG (*Archiv für Ohrenheilkunde*, Bd. 27, Feb. 1889, Report of Clinic in Halle) report six cases of excision of the malleus in the clinic within the fifteen months—January 1, 1887, to March 31, 1888. More cases, however, have been recorded in their private practice in the same period. In four cases there was a perforation in the membrana flaccida, close above the short process of the hammer. In all of these cases necrosis of the malleus head was diagnosed, and verified by the operation.

The very chronic discharge in the first case of excision of the malleus, was cured by the operation, and the subsequent free cleansing and drainage, in two months. The second case was benefited. The third case showed a similar result. The fourth case was cured in one month after the operation. The fifth case, with otorrhœa on *both* sides, was cured by the operation in both ears, for a month; then a return of otorrhœa ensued in both ears. This case being double otorrhœa, and operated on in both ears, furnished two excisions, and makes up the six mallei removed.

CARIES OF THE TEMPORAL BONE, FOLLOWED BY PENETRATION OF PUS INTO THE CRANIAL CAVITY, AND COLLECTION OF THE SAME IN THE LOWER PART OF THE NECK.

PROF. DE ROSSI, of Rome, has reported a case characterized by the above prominent symptoms (*Annales des Maladies de l'Oreille*, February, 1889). He maintains that when a purulent affection develops in the mastoid cavity, the pus tends to escape, not always in the direction of the least resistance. Its course is determined by the connective tissue, the bloodvessels, the lymphatics, and the nerves most accessible to the septic matters and the pyogenic microbes. Thus the broad and thick layer of connective tissue over the petrosquamous suture, explains in part the frequency of abscesses on the external wall of the mastoid, and the occasional necrosis in the bone at that point. Again, the numerous veinlets traversing the internal wall of the mastoid cavity form, with the connective tissue accompanying them, the best pathway for the pyogenic microbes into the transverse and sigmoid sinuses. This gives rise to a periphlebitis at these points, without perforation of the bone.

In the case presented by de Rossi to the Academy of Medicine in Rome, which formed the foundation of the paper before us, the pus which collected at the lower part of the neck could be forced out at the external auditory meatus, after following the nervo-vascular fasciæ, through the posterior foramen lacerum, entering again the cranial cavity, where a subdural abscess had formed, and passing by a perforation in the sigmoid sinus, arrived at last in the mastoid antrum, and from there escaped into the tympanic cavity. "It is worthy of note that the membrana tympani remained intact from the processes of disease." Yet it must have been incised if pus escaped in this case from the external auditory meatus; as we are informed it did.

The conclusion of Prof. de Rossi is: "Given symptoms of an intra- or

extra-cranial abscess, with history of purulent inflammation of the middle ear, we must open the mastoid cavity and seek the pus, even as far as the sigmoid sinus."

MASTOIDITIS; ITS COURSE AND THE RESULTS OF PERFORATION OF THE MASTOID APOPHYSIS.

PROF. COZZOLINO, of Naples, has communicated his experience with mastoid inflammation and its results, based on observations in his aural clinic between November, 1883, and June, 1888 (*Annales des Maladies de l'Oreille* January, 1889).

Mastoid disease is nearly always consecutive to chronic purulent otitis media (rarely to acute otitis), and to osseous lesions in the auditory canal. Therapeutically considered, these affections are divided into three groups: 1. Treatment of lesions of the mastoid by trepanation, curetting the cavity, and by antiseptic lavage. Twenty-two such cases are tabulated, all consecutive to otitis media purulenta chronica. 2. Treatment of perimastoid affections by Wilde's incisions, and rigorous antiseptic measures applied to the middle ear cavities. Seventeen cases are tabulated, consecutive to chronic purulent otitis media. 3. Treatment of peri- and endo-mastoid lesions of a benignant type, at their outset, by careful antiseptic measures applied to the tympanic and mastoid cavities. These number seven, and were invariably consecutive to acute otitis media.

The following conclusions are given regarding the respective rôles of purulent infection and tuberculosis in the pathogenesis of mastoiditis:

1. The author has observed cases of endo-mastoiditis following chronic otitis media purulenta, manifesting all the symptoms attributed to tuberculosis of the temporal bone, yet in which the bacteriological examination gave results contrary to the diagnosis, and which demonstrated that the lesion was due to bacteria of suppuration, and not to those of tuberculosis.

2. Tuberculosis of the temporal, heretofore nearly abandoned to simply general treatment, is susceptible to treatment, as the author has demonstrated by means of curettage, aided by the most rigorous local antisepsis and rational treatment of the chronic inflammation of the middle ear and adjacent parts.

In the case of a child three years old, affected with scrofulo-tuberculous mastoiditis, among other tuberculous maladies, and in which the bacilli of Koch were found, Cozzolino obtained cicatrization in the osteo-periosteal structures by curettage, galvano-caustic, and antiseptic dressings of iodoform, corrosive sublimate, alcohol, and thymic acid.

His final general conclusions are: 1. Mastoid inflammation is always the result of chronic purulent otitis of the middle ear.

2. In all cases of mastoiditis, granulations and polypi are found in the middle ear cavities, which prevent the escape of pus from the tympanic cavity into the auditory canal. Sometimes there are small tumors found in the auditory canal, and also stenosis of this way of escape. It is the arrest of the escape of pus in these cases which is the cause of the diffusion of the inflammation from the tympanic cavity to the middle ear. In the pus thus detained in the mastoid, acids form, capable of exerting a corrosive chemical

action upon its osseous tissue. Hence the most rigorous antiseptis is demanded in these cases.

3. If there are no osseous lesions nor granulations in the middle ear, operation on the bone can be avoided by antiseptic treatment alone, and the mastoiditis thus cured. This will be the case in mastoiditis secondary to an acute otitis media.

4. Politzer's method of inflation is not competent to force pus into the mastoid cavity, and thus induce mastoiditis.

5. Trepanation is demanded when there is a new formation in the mastoid cells or some other osseous lesion, such as a sequestrum. It is not demanded always when there is present a simple caries, as both endo- and peri-mastoiditis accompanied by caries, recover under antiseptic treatment of the aural cavities. The simplest measures should be tried before having recourse to perforation of the mastoid.

6. In the diagnosis of meningeal and cephalic complications the surgeon should be guided by the ophthalmoscopic examination in addition to the ordinary symptoms in patients with suppuration in the ear, who suffer also with obstinate headache, nausea, and vomiting.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF
J. SOLIS-COHEN, M.D.,
OF PHILADELPHIA.

MYCOSIS IN HEALTHY SUBJECTS.

DR. OTTO SEIFERT, of Würzburg, refers (*Rev. de Lar.*, etc., March 1, 1889) to two cases reported by Freudenberg, and adds one of his own. A barber, thirty-six years of age, living in healthy quarters, had often had inflamed tonsils. For two days he had complained of pains in the neck as from an abscess. The last night they had been so intense, chiefly in the region of the larynx, that the patient could hardly swallow liquids. Examination revealed the uvula, the left side of the soft palate, and the left tonsil reddened; the uvula being oedematous. The border of the uvula was white and brilliant. Its posterior surface supported a series of white points distinctly situated upon a reddened base. Similar white points occupied the anterior surface of the anterior left palatine fold, principally at its inferior portion. The mucous membrane of the base of the tongue and of the epiglottis was strongly injected. The base of the tongue and the anterior surface of the epiglottis were likewise covered with the small patches elevated a little above the surface of the mucous membrane. Microscopic examination revealed granular detritus of epithelium and brilliant corpuscles representing the *oïdium albicans*.

The treatment consisted in the topical use of ice to relieve the pain in

deglutition, and in gargarisms of borax. The disease disappeared entirely in a few days. Its source could not be discovered.

ADENOID VEGETATIONS IN THE PHARYNX.

DR. KRAKAUER, of Berlin, reviews (*Berliner klin. Woch.*, February 4, 1889) the various methods of removing these growths, and presents a new form of scraper which seems to be admirably adapted to its purpose. The blade of the instrument is curved backward upon the stem, and is convex from side to side, so as to avoid injuring the pharyngeal extremities of the Eustachian tube, the terminal convex edge alone being sharp. It is intended to be hooked into the anterior portions of the morbid growths and to scrape them off with a pull downward. The blade measures $\frac{1}{2}$ inch from side to side, and $\frac{1}{4}$ inch from front to back. The same instrument suffices for children and adults alike. In more than forty cases in which Dr. Krakauer has used it, only one or two tugs, and at most three, have sufficed to remove the entire mass of vegetations, which, in many instances, had acquired the volume of the phalanx of the thumb. It is claimed that the instrument will not shave off healthy mucous membrane.

While instruments of this scraping class enable large masses of adenoid growths to be removed rapidly, the fact should not be ignored that several serious and alarming accidents have occurred with them from the dropping of the removed or detached fragments into the larynx, and that at least one author has reported a fatal instance under his own hand. Instruments that bring away whatever is removed are far safer, even though the immediate results may be less brilliant in the majority of cases.

INTUBATION IN LARYNGEAL DIPHTHERIA.

DR. DILLON BROWN, of New York, gives (*N. Y. Med. Journal*, March 9, 1889) an analytical table of 200 patients operated upon by him, all but 1 of them in consultation practice, of whom 54, or 27 per cent., recovered. He also appends a combined table of 2368 cases with 647 recoveries, or 27.3 per cent. This shows that his own experience has furnished a very accurate representation of the efficacy of the procedure. This is the most valuable statistical record that has appeared. Dr. Dillon furnishes several tabular charts of his own cases, showing the relative numbers and proportions of deaths from various causes; the percentages of recoveries according to the duration of laryngeal symptoms before the operation became necessary; the percentages of recoveries according to similar duration of pharyngeal or post-nasal diphtheria; the percentages of recoveries according to age; and the percentages of recoveries for each month of the years 1885 to 1888.

His results indicate that those cases are the most favorable in which the progress of the stenosis is slow; that cases in which the membrane is absent from the pharynx or posterior nares are rather more fatal than those in which the membrane is present; that the death-rate is high in patients over eight years of age, because an unusually severe type of diphtheria is requisite to cause sufficient stenosis to need operative interference; and that variations in the results in different years are due in part to maturer experience in the

later years, but more so to variations in the type of the disease during the different winters. Of the last 115 cases operated on by Dr. Dillon, 50 were treated without bichloride of mercury, of whom 24 per cent. recovered; and 65 with it, of whom 36.9 per cent. recovered; thus convincing him of the value of that drug in the medicinal treatment of diphtheria.

LIPOMA OF THE LARYNX.

DR. P. M'BRIDE (*Edinburgh Med. Journ.*, February, 1889) reports two cases of this rarity. In one instance a man had a pale pink rounded tumor, the size of a pigeon's egg, behind the tongue. It was attached to the epiglottis. About one-half was excised with scissors. The remainder was removed with the electro-caustic snare. It was found to be a fibro-lipoma. The stump had a broad attachment to the right vallecula and adjacent part of the dorsum linguæ. Recrudescence took place, and in five months it was as large as at first, and was again snared with the electro-caustic loop, and withdrawn as though it had been enucleated and not excised. In the other instance, a man seventy-one years of age, had a pale pink tumor, the size of a bantam's egg, overlying the left arytenoid cartilage. It was seized with a vulsellum, and excised with the electro-cautery snare. Its pedicle was narrow, and had been attached to the outer part of the right pyriform sinus. It had a distinct capsule.

These tumors, it will be seen, belong to the class of pharyngo-laryngeal and linguo-laryngeal growths, external to the larynx proper. All the reported cases, as far as the compiler's memory serves, have been extra-laryngeal save one recorded by von Bruns; and all with one exception have occurred in males. It would be interesting to investigate the histologic cause of apparent immunity for the sex.

ARTIFICIAL OPENINGS INTO THE LARYNX.

DR. FURUNDARENA-LABAT, of Tolosa, reports (*Rev. Mens. de Lar.*, February, 1889) a satisfactory performance of intercrico-thyroid laryngotomy for encephaloid carcinoma of the larynx in a man sixty-seven years of age; the opening having permitted the introduction of a canula one-third inch in diameter. The skin and premembranous tissues were severed with a Paquelin thermo-cautery; the membrane with a bistoury. There was not the slightest effusion of blood.

ON CURETTING LARYNGEAL GROWTHS.

PROF. F. MASSEI, of Naples (*Journ. Lar. and Rhin.*, February, 1889), refers to the recommendation of curettes, by von Bruns, in 1865, in his work on *Laryngoscopy and Laryngoscopic Surgery*, and to the plain, sharp spoons and the scissor-like scrapers used by Rossi, of Rome (*Lo Sperimentale*, February, 1887). He cites an instance in which Wroblewski successfully removed a large papilloma from the lower part of the epiglottis by a single curetting, after having performed tracheotomy. He then mentions the value of the curettes used by Heryng for scraping away tuberculous portions of the larynx, which he has used with success in removing papillomas both large

and small. Illustrations are presented of all these instruments. He concludes that curetting deserves better appreciation than it has received; that it is very serviceable in growths situated in the subglottic region and on the vocal bands or on their free edges; that it removes portions of the tissue from which the growths have originated, and permits more direct treatment afterward with local agents, of which lactic acid is the most preferable, and thus gives greater security against recurrence.

CARCINOMA OF LARYNX.

An instance of auto-inoculation of the right vocal band, limited at first to a point at which it was impinged upon by an ulcerating carcinoma of the left vocal band, has been described by DR. NEWMAN (*Lancet*, January 19, 1889), at a meeting of the Clinical Society of London.

An instance of exfoliation of the greater part of the laryngeal cartilages in a case of carcinoma, was reported at the same meeting by SEMON (*idem.*). The patient was a man fifty-two years of age. The disease had begun in hoarseness, April, 1886; dyspnœa had supervened later, and tracheotomy had been performed September, 1887. When first seen by Semon, January, 1888, the laryngeal appearances were entirely those of perichondritis, but there was typical carcinoma externally below the tracheotomy tube. Hemorrhages from the tube became more and more frequent, with expectorations of fragments of gangrenous muscles, and subsequently of cartilage. On one occasion a large part of the cricoid plate, and on another almost one-half of the thyroid were expelled. Death took place by exhaustion July 27, 1888. At the post-mortem the larynx was found changed into an enormous cavity, 6.5 cm. in length, the walls of which were ulcerated throughout. Only the greater part of the left half of the cricoid and the left arytenoid cartilage were found, the remainder of the laryngeal cartilages having been destroyed or eliminated. The trachea was healthy. There was no perforation of the œsophagus. There was right-sided purulent pleurisy. The right lung was consolidated, and contained numerous gangrenous cavities.

LARYNGECTOMY FOR CARCINOMA.

DR. M. SCHEDE, of Hamburg, reports (*Deut. med. Woch.*, January 24, 1889) a case of complete recovery of more than four years' standing. A woman, fifty-six years of age, had an extensive carcinoma, for the eradication of which, on June 24, 1884, Schede extirpated the entire larynx, the cricoid cartilage, and the upper ring of the trachea. As recently exhibited to the *Arztlichen Verein* of Hamburg, she was presented as a healthy woman attending to an extensive business, and providing for a household in which thirty persons sit at table daily. She had not been hampered a day in her avocations since October 10, 1884, at which time a recurrent carcinoma had been extirpated from the right upper margin of her pharyngeal fistula. She occludes the pharyngeal portion of her tube with an obturator when eating; and, as witnessed by the members of the society, swallows water without any difficulty. She also wears the obturator at night, which prevents her from being disturbed by tricklings of saliva through it. She wears an aluminium ball valve when

she speaks. She is happy in her work and in no wise embarrassed in any of her functions. In fact, she endures no more than any one does who suffers with chronic hoarseness. Her condition, therefore, is the very opposite of being utterly miserable.

SCHIECH also reported two other cases of complete laryngectomy, which ran a good course at first, but in which death ensued subsequently by recurrence.

LONG SOJOURN OF A FOREIGN BODY IN THE TRACHEA.

PROF. E. LEYDEN (*Deut. med. Woch.*, Jan. 31, 1889) exhibited to the Society for Internal Medicine a fragment of flat, shap-pointed calf bone, two centimetres long and one centimetre broad, which had remained in the air-passage, trachea most probably, of a young lady for eight and a half months, and which was finally expectorated after having produced an almost continuous and distressing cough which had resisted most varied medication and climatic treatment to which she had been subjected. The chief clinical point in the case was the absence of hoarseness throughout, and the absence of any evidence of impairment in the general health. We note that a probable diagnostic feature that had been attributed to irritation at the bifurcation of the trachea, had been present in a continuous pain beneath the sternum. In the discussion of the subject (*Idem.* Jan. 24) several instances were narrated of the long sojourn of foreign bodies in the air-passages, some of them without producing any impairment of health.

A FLEXIBLE CANULA FOR THE OBSTRUCTED TRACHEA.

DR. A. GOUGUENHEIM, of Paris, reports (*New York Med. Journal*, March 9, 1889, illustrated) a case of tracheotomy for carcinoma of the larynx in which great dyspnœa ensued subsequently, in consequence of the development, at the site of the wound, of a tumor which increased to the size of an orange and pushed the canula very much out of place, so that it became too short to be of proper service. Gouguenheim had a silver canula constructed, with its terminal two-thirds formed of a continuous spiral, the rings of which are attached to each other so that this lower portion should be movable. It has answered its purpose admirably. Furthermore, it always remains *in situ* when the strings which fasten it around the neck are loosened. Illustrations are given of the canula, and of its aspect in position.

ERYSIPELAS OF THE NASAL PASSAGES.

DR. SCHIFFLERS, of Liège, reports (*Rev. de Lar.*, etc., March 1, 1889) two cases of intranasal erysipelas consecutive to erysipelas of the face. They were successfully treated by irrigation two or three times a day with a solution of corrosive sublimate 1 : 4000, and the continued use of intranasal tampons of sublimated cotton.

1.95 per cent.; Braun also reports 163 spontaneous births in contracted pelves, with no mortality; 54 cases of induced labor, no mortality; 89 versions, no mortality; and 78 atypical forceps deliveries in contracted pelves, mortality 1.29 per cent.

BRAUN (of Krakau) (*ibid.*) reports a Cæsarean section for neuroma, with fatal result, before the modern operation. A Porro operation for contracted pelvis (conjugata vera two and one-third inches) followed, with success. A Säger operation for contracted pelvis was successful; two post-mortem sections were also made, one for rupture of the uterus, one for meningitis and pulmonary œdema; in the latter the child was delivered alive.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,
OF NEW YORK.

THE TREATMENT OF PYOSALPINX BY PUNCTURE THROUGH THE VAGINA.

ROCHET (*Province Médicale*, December 15, 1888) reviews the different varieties of salpingitis, adopting a classification which will not commend itself to pathologists. The only interest in the paper centres in the paragraph on treatment, in which he alludes to the views expressed by Laroyenne regarding the palliative treatment of pyosalpinx. "A large number of gynecologists," says the author, "try a less radical, or, at least, a less dangerous treatment (than laparotomy), and one which is, moreover, rational since it consists in the evacuation of the purulent collection." Since many diseased tubes are so buried in adhesions as to be non-removable without great danger of rupture, the writer agrees with Laroyenne that it is preferable in such cases to puncture through the vagina, to enlarge the opening, and to wash out the sac, as in a case of ordinary pelvic abscess. This treatment should not be adopted to the exclusion of radical operations in proper cases.

[We have quoted from this paper in order to express our disapproval of the views advanced. They will be accepted by few, if any, experienced laparotomists, since they imply a radical misconception of the difference between pyosalpinx and pelvic abscess proper. The latter is an abscess pure and simple, a "circumscribed collection of pus;" the former is an entirely different condition, both etiologically and clinically. No one denies that a true pelvic abscess may be cured by incision and drainage per vaginam, but he is a timid surgeon who would adopt such treatment in a well-recognized case of pyosalpinx. It would seem unnecessary to dispute this point at all if it were not for the occasional expression of such views as those which we have quoted. If generally applied, we must regard them as mischievous, and opposed to good surgery.—ED.]

THURE BRANDT'S METHOD AS AN AID TO THE DIAGNOSIS OF SALPINGITIS.

WINAUER's article on this subject (*Centralblatt für Gynäkologie*, December 29, 1888) is quite suggestive, although his observations were unfortunately not confirmed by laparotomy or autopsy. Referring to the difficulty which is experienced in distinguishing at the examining table a dilated tube when buried in a mass of exudation, he calls attention to the ease with which the diseased tube or ovary may be mapped out after the adhesions have been stretched by a course of pelvic massage, according to the method practised by Brandt. In four patients who were thus treated (the *séances* varying from four to sixteen) the obscure mass felt at the first examination was so cleared up that it was possible to trace the enlarged tube throughout its extent, and to define its relation to the cornu uteri. After prolonged treatment the abdominal wall became relaxed, the adhesions distensible, and the original tenderness so much diminished that it was possible to make a perfectly satisfactory diagnosis without administering an anæsthetic. Of course, the presence of sub-acute inflammation is a contra-indication to pelvic massage, although it is not always so regarded.

Brandt is credited by Theilhaber (*Münchener med. Wochenschrift*, 1888, No. 28) with venturing to attempt the emptying of a distended tube into the uterus by "rolling it gently between the fingers of both hands," a manœuvre which it is admitted often causes an "escape of secretion into the peritoneal cavity, which readily gives rise to transient symptoms of peritonitis"(!).

HYSTERORRHAPHY.

LEOPOLD reported at a recent meeting of the Dresden Gynecological Society (*Centralblatt für Gynäkologie*, March 10, 1889) nine cases of ventro-fixation of the uterus, some of which were successful at the expiration of two years. He advises the operation only in exceptional cases, where the ordinary treatment (including the practice of Schultze's method) was unsuccessful. He introduces several silk sutures through the entire thickness of the abdominal wall, and to the depth of three millimetres into the muscular tissue of the fundus uteri, and removes them at the end of fourteen or sixteen days.

In the discussion following BODE objected to the performance of laparotomy for the correction of the displacement alone. He had in many instances succeeded in loosening the adhesions by Schultze's method. In cases of retroflexion with fixation, in which he had performed laparotomy for other reasons, he was accustomed to separate the adhesions and, after anteverting the uterus, to retain it in its normal position by shortening the round ligaments. He had performed hysterorrhaphy three times, but the patients all had more pain than after an ordinary laparotomy, and in every instance developed mural abscesses at the site of the uterine sutures.

SCHRAMM preferred Thure Brandt's method, but did not think that the adherent uterus could always be detached by pelvic massage. He had performed ventro-fixation in six cases with good results; the uterus remained permanently in a position of anteversion, although the patients were subject to constant physical strain.

The os and cervix were so tightly contracted that exploration of the uterus was impossible. The continuous use of the tampon, ergot, and ether hypodermatically, and quinine and stimulants, resulted in the spontaneous expulsion, after four days, of a placental cotyledon, which had decomposed and was extremely offensive. A very foul discharge had persisted in spite of intra-uterine injections of bichloride of mercury 1 to 1000, with moderate fever. The patient speedily recovered after the expulsion of the fragment of placenta.

EXTRA-UTERINE PREGNANCY, WITH OVARIAN CYST.

EDIS (*Medical Press*, February 27, 1889) reports a case of cyst of the right ovary, with tubal pregnancy, which ruptured with fatal result. A diagnosis of the extra-uterine gestation was made very early in the case, but operation was deferred until rupture produced urgent symptoms, by the decision of a consultation. Operation was performed, but too late, the patient dying from shock following hemorrhage into the broad ligament.

EXTRA-UTERINE PREGNANCY, WITH THE EXPULSION OF THE FŒTUS PER RECTUM.

MORISANI (*Wiener klinische Wochenschrift*, No. 7, 1889) reports the case of a multipara, who presented herself at his clinic in Naples, with the history of cessation of menstruation; persistent slight hemorrhage, with periodic pain in the abdomen and on the perineum. For a time foetal movements and many of the usual symptoms of uterine gestation existed. After an attack of severe abdominal pain followed by hemorrhage and urgent desire to empty the rectum, foetal movements ceased. A recurrence of these symptoms led the patient to go to stool, where she passed blood and sero-mucoid fluid; she attempted manually to remove the offending substance from the rectum, and grasped the leg of a foetus.

On admission to the hospital, she was extremely prostrated. A foetus, about nine inches long, was removed from the rectum; the foetal cyst was thoroughly cleansed and disinfected, and a large drainage tube inserted. Under a strictly antiseptic and stimulating treatment the patient recovered, the rectal opening gradually cicatrized as the sac became obliterated, and she left the hospital before Morisani had an opportunity to close the small rectal opening remaining.

Tubal pregnancy, with rupture and discharge of the ovum into Douglas's cul-de-sac, had existed, with final discharge of the foetus per rectum. The foetal appendages had necrosed and been discharged in the same manner.

HERNIA OF THE PREGNANT UTERUS.

ADAMS (*American Journal of Obstetrics*, March, 1889) has collected 23 cases of hernia of the pregnant uterus, of which 10 were inguinal; 1 crural; 1 sacro-sciatic; 4 umbilical, and 8 ventral. The maternal mortality was 25 per cent.; foetal mortality 14 per cent. Diagnosis was made early in inguinal and crural; after the eighth month in umbilical; after the fifth month in ventral hernia. 6 cases of inguinal hernia were treated by Cæsarean section

1 by Porro's operation; in 1 case delivery was spontaneous; premature labor was induced in 1. The case of crural hernia was treated by Cæsarean section, the child being saved. The cases of umbilical hernia were successfully treated by supporting the uterus twice; by forceps in one case; labor occurred once spontaneously. Ventral hernia was successfully managed by supporting the uterus in four cases; two cases terminated spontaneously. In some cases the method of treatment and result could not be ascertained.

In general, reposition of the uterus should be attempted as early as possible, care being taken to avoid abortion or premature labor. If the uterus cannot be replaced, it should be supported by a broad bandage, and pregnancy should go on to viability. A truss will generally retain a uterus which can be replaced. If the fœtus can pass through the hernial ring, labor should be induced at viability. When the fœtus cannot pass through the natural exit, Cæsarean section should be performed.

RECENT LITERATURE ON THE CÆSAREAN SECTION.

SÄNGER (*Centralblatt für Gynäkologie*, No. 8, 1889), in a discussion at Leipzig, defines his method of operating to be an efficient closing of the uterine wound by abundant stitches which unite the uterine muscle, without leaving a stitch-fistula into the uterus; over this closure of the peritoneum, bringing its surfaces together by a double row of stitches, using an antiseptic suture material which will not suppurate and loosen. The various modifications of Säger's method have added nothing to its efficiency.

LEOPOLD (*Archiv für Gynäkologie*, Band 34, Heft 2) has added eight recent Cæsarean sections to his record, which now aggregates thirty-one. Of his recent operations seven were done for contracted pelvis, and one for eclampsia. He employs the elastic ligature about the cervix, passing it once around, and drawing it just tight enough to prevent hemorrhage: he considers it indispensable. Stringent antisepsis is practised; the vagina and cervix are carefully douched and filled with iodoform gauze.

Leopold does not incise the uterus *in situ*, but turns it out of the wound, and when the fœtal heart-sounds are weak and irregular, does not wait to insert stitches in the abdominal wound, but has the abdomen closed by the assistant's hands, while he quickly incises the uterus and extracts the child. The greatest dexterity and expedition are needed to rescue feeble children in these cases. His material for deep sutures is chromicized catgut; for superficial, fine silk. He has modified his former indications for operation to include cases where fœtal heart-sounds suddenly fail. Among his recent cases was one of acute gonorrhœa; the vagina and cervix were carefully disinfected and filled with iodoform gauze; mother and child recovered.

His results in twenty-five cases of conservative Cæsarean section are, maternal mortality eight per cent., fœtal mortality nil. In comparing craniotomy and Cæsarean section, he estimates maternal mortality after craniotomy to be nil; he believes that Cæsarean section is at least five times more fatal for the mother than craniotomy, and is to be performed when the mother willingly assumes the risk of the operation.

In this connection he quotes Carl Braun's results at Vienna by other methods. 51 cases of contracted pelvis delivered by craniotomy, mortality

writer states that the condition described probably exists normally after parturition, he assigns to it a distinct symptomatology and a line of treatment which to most gynecologists must appear somewhat heroic. Conservative readers will hardly favor the addition of a new affection to the already long list of tubal diseases.—ED.]

THE SUBSEQUENT CONDITION OF THE OVARIES AND TUBES AFTER EXTIRPATION OF THE UTERUS.

GRAMMATIKATI, as the result of a series of experiments upon rabbits, arrives at the following conclusions:

1. The ovaries continue to be functionally active after extirpation of the uterus. The ovisacs continue to ripen, the ova to be discharged, and corpora lutea to be formed as before.

2. If both the uterus and the tubes are removed the ovaries still remain active.

With reference to the disturbances which may arise from this persistence of ovarian activity, the writer calls attention to the difference noted according as the patient is young or at the menopause. In the former case she may have after hysterectomy various indefinite pains in the abdomen and reflex phenomena, especially nausea, dyspnoea, neuralgia, etc. These symptoms sometimes show a certain periodicity in their recurrence corresponding to the menstrual nixus. The practical deduction is to remove the ovaries with the uterus.

PERSISTENT MENSTRUATION DUE TO REMAINS OF OVARIAN STROMA.

At a recent meeting of the British Gynecological Society (*British Gynecological Journal*, February, 1889) DR. HEYWOOD SMITH referred to the importance of removing the entire ovary and tube when performing salpingo-oöphorectomy, since he believed that the recurrence of the monthly flow might be due to the leaving behind of a small portion of the ovarian stroma.

In the discussion which followed, Dr. Bantock stated that he did not accept this explanation of the phenomenon, since he could recall several cases in which menstruation persisted after complete removal of the ovaries. MR. TAIT ridiculed the idea that a small fragment of an ovary could produce this result any more than a bit of kidney could go on secreting urine after the rest of the organ had been excised. Menstruation was not at all dependent upon the ovaries; in one of his cases it persisted after the uterus and appendages had been removed.

PUNCTURE PER VAGINAM IN CASES OF ABSCESS OF THE OVARY.

A statement by DR. ROUTH (*Ibid.*) with regard to the palliative treatment of this condition provoked an interesting discussion, in which Mr. Tait protested strongly against puncture per vaginam. It was impossible, he said, to "cure even a simple parovarian cyst by tapping; it was sure to refill and require removal." *Apropos* of pelvic abscesses, he expressed the opinion that "a parametric abscess was about the rarest pelvic condition there was." Any tumor which bulged into Douglas's pouch could not lie within the broad liga-

ment, but must be intraperitoneal. An exudation in the left broad ligament would be felt as a ring nearly surrounding the rectum; one in the right would be detected along the brim of the pelvis. The entire differential diagnosis of pelvic tumors was based upon these facts.

ELECTRICITY IN GYNECOLOGY.

Recent papers on this subject by DR. STEAVENSON and DR. SHAW, read before the London Obstetrical Society (*Transactions* for June and July, 1888), provoked a somewhat heated discussion, in which DR. PLAYFAIR enthusiastically upheld the value of Apostoli's method of treatment, which he thought was destined to limit considerably the field of abdominal surgery. DR. BANTOCK expressed marked scepticism with regard to the brilliant results claimed by Apostoli in treating fibrous tumors of the uterus. He said that he had never yet seen a case in which such a tumor was caused to disappear by the use of the constant current, although this had actually occurred after removal of the tubes and ovaries, as he could testify. The consensus of opinion was not flattering to the electrical treatment.

MEDICAL JURISPRUDENCE.

UNDER THE CHARGE OF

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THE SECOND TEST OF LIVE-BIRTH.

NIKITIN, of Moscow, gives this title to a paper on the value of the presence of air in the stomach and intestines of a newly born infant, tested by the ability of these organs to float in water, as a proof of the child having been born alive, and places this test next in importance to the hydrostatic lung test (*Viertelj. f. gerichtl. Med.*, N. F., Bd. xlix. pp. 44-63 et 282-303). His experience is derived from the post-mortem examination of one hundred newborn children in the University and of twenty-four children in the Foundling Hospital of Moscow.

His conclusions are:

(1) The gastro-intestinal test not only supports the lung test, but it is even able in some cases, in which the lung test is negative, to afford evidence by itself of live-birth. (2) If in the fresh corpse of a newborn child, the stomach, and especially if also the intestines contain air, and float in water, it may with certainty be concluded that the child survived birth; provided air was not artificially introduced into the stomach, as by inflation. (3) If the body is well advanced in putrefaction, the gastro-intestinal test is less reliable than the lung test; but if the body is only moderately putrefied, the former test is as trustworthy as the latter. (4) A negative result from the gastro-intestinal test is not proof of the child having been stillborn, no more

Leopold, in conclusion, agreed that Schultze's method was useful in many cases, but not in those which he had selected for operation. When both the uterus and adnexa were firmly adherent it was rarely successful. He did not believe that the shortened round ligaments would sustain the uterus permanently, as they would stretch in time.

SALPINGOTOMY FOR HÆMATOSALPINX DUE TO ATRESIA OF THE VAGINA.

FULD (*Archiv für Gynäkologie*, Bd. xxxiv. 2d part, 1889) in an elaborate article, based upon a successful case of laparotomy for the relief of this condition, analyzes sixty-five cases, forty-eight of which terminated fatally. Thirty-nine patients were operated upon, seventeen being cured. Among the different methods of treatment Kaltenbach recommends puncture per vaginam, especially when rupture seems imminent, several cases having been thus treated with success. Hausmann approves of puncture through the abdominal wall, but no successful cases have been recorded; the same is true of puncture per rectum as practised by Brown. Removal of the hæmatosalpinx is most popular, Schröder having performed the first operation. Breisky and most other surgeons advise emptying the uterus before resorting to laparotomy. The author agrees with them, and recommends that, if the tubal sac does not become smaller as soon as the hæmatometra has been evacuated, the abdomen should be opened. Laparotomy should also be performed promptly if the sac disappears suddenly after emptying the uterus (provided that there is not a characteristic discharge of inspissated blood from the tube), as it is probable that the tube has burst and that its contents have escaped into the peritoneal cavity.

A CONTRIBUTION TO THE LITERATURE OF MASSAGE OF THE UTERUS AND ADNEXA.

KOPLIK (*Amer. Journ. of Obstetrics*, February, 1889) contributes an interesting paper on this subject, in which he presents in a very condensed form, his experience with Brandt's method of pelvic massage, and calls attention to the dangers incurred. These are: Hemorrhage, rupture of bands, expression of pus from the tube into the peritoneal cavity, and rupture of small follicular cysts of the ovary or encapsulated collections of pus. A case is cited in which hæmatoma followed a *séance*. Sudden pain during massage of the ovaries, which disappears after a few days, is probably due to rupture of a peripheral cyst. There is always more or less risk in manipulating the tubes, even when they are not apparently diseased; so that it is better not to massage them.

SUPPURATIVE DISEASE OF THE UTERINE APPENDAGES.

BOLDT (*Ibid.*, March, 1889) is more conservative in his views than most of the recent writers on this subject. He divides cases of tubal disease into three classes—those in which operative interference is unjustifiable, those in which the patient should be kept under constant palliative treatment, and a third, in which an operation should be performed without delay. Pyosalpinx is a condition calling for prompt interference, since the patient is always in imminent danger of rupture; hydro- and hæmatosalpinx should also be removed,

provided that the tube is occluded at the uterine end, a fact which can be determined by gently squeezing it from the distal toward the proximal end, and noting if its contents are evacuated. Even in cases of pyosalpinx it may be advisable to delay operative interference if the pus can be evacuated into the uterine cavity by employing Brandt's method. The latter claims to be able to cure such cases, but the writer has very rarely been able to demonstrate this condition before opening the abdomen. When the tube is only moderately distended, is non-fluctuating, and gives rise to few, if any, symptoms one should delay operation, since it is possible that the pus has become cheesy and is then in no danger of escaping into the peritoneal cavity. A distended tube should not be aspirated per vaginam unless the operator is sure that it is so encapsulated that the pus cannot make its way into the peritoneal cavity after withdrawal of the aspirating-needle.

In conclusion the writer adds the caution that, while Brandt's method may be valuable as an aid to the diagnosis of patency of a tube, it is dangerous in the hands of the inexperienced.

OPEN FALLOPIAN TUBES; THEIR DIAGNOSIS, PATHOLOGY, AND TREATMENT.

WALLACE contributes to the *British Medical Journal*, February 23, 1889, a short but suggestive paper on this subject, based upon observations made in fifty-three cases. He inclines to the belief that patency of the tubes is a normal (?) post-partum condition, due to subinvolution of these ducts, and referable to the same causes as subinvolution of the uterus. Relaxation of the uterus may also account for non-closure of the ostium uterinum. He dismisses as absurd the old idea that the lumen of the tube becomes larger during menstruation, in order to allow the passage of the ovum. It may happen that only one tube is patent during pregnancy, the ostium uterinum of the other being covered by the placenta.

Certain symptoms are mentioned as accompanying patency of the tubes, although they are not clearly defined. In exploring the pelvic cavity in a typical case the mucous membrane of the vulva and vagina is congested, red, and livid, and this is intensified on the shortened, swollen, and œdematous cervix uteri, which fills the calibre of the largest speculum. The os is patulous, eroded, and is filled with a plug of ropy mucus. The uterus is large and retroverted, and the ovaries and tubes are usually felt behind it. A blunt-pointed sound, if introduced up to either cornu can, with a little manipulation, easily be slipped into the open tube and may be passed up to the hilt, when the tip will be felt through the abdominal wall. The patient experiences no pain or subsequent discomfort. No force should be used, the sound being held between the thumb and finger.

The prognosis of these cases is rather doubtful. The treatment consists in hot vaginal douches, replacement and support of the uterus, and weekly catheterization of the tubes. No intra-uterine injections should be given. When the probe after being introduced is "grasped by a firmly contracting uterus," the surgeon may infer that the organ is recovering its tone and that the tubes will soon close.

[This paper is somewhat confusing, by reason of the fact that while the

retired from the case, which the latter did. Dr. C. then arrived, and found a cross-presentation, and the woman complaining of much pain, other than of normal parturition, in the hypogastrium. She was also suffering from dyspnoea and vomiting. No signs of excessive hemorrhages from the genitals. Dr. C. at once turned the child, and delivered it with ease. But in introducing his hand into the vagina, he felt a cord-like piece of tissue pressing against his wrist, whose presence he could not explain. The subsequent stages of the labor were completed successfully. The woman, however, complained of violent pain in the left side of the abdomen; and, twenty-four hours later, a distinct swelling could be felt there. Forty-eight hours after the birth the woman died, with symptoms of abdominal inflammation, but without rise of temperature. At the autopsy, it was ascertained that the peritoneal cavity contained some ounces of dark, partly fluid, partly coagulated, blood; omentum slightly inflamed; uterus reddish-brown, and much swollen; a large tear at the inner edge of the vagina, toward the left side and front, measuring five inches long, and one to two inches broad, the edges of the tear being uneven, jagged, and reddened.

The conclusions arrived at by the experts who made the autopsy, was that Mrs. K. had died from injury to the genital organs, and that this injury could have been produced in the unskilful attempts of Dr. V. to deliver the woman. The *Medicinal Collegium* approved of the above conclusion, and characterized the treatment of Dr. V. as being throughout unskilful: (1) in administering ergot in a case of cross-presentation; (2) in endeavoring to deliver the child by pulling at its arm, and (3) by the use of forceps; and (4) in making no attempt to turn the child.

THE DETECTION OF BLOOD-STAINS WHICH HAVE BEEN EXPOSED TO A HIGH TEMPERATURE.

At the suggestion of PROF. LIMAN, of Berlin, KATAYAMA has carried out in Salkowski's laboratory, a long series of experiments for the purpose of determining the effect of different degrees of heat on blood-stains, in interfering with their detection (*Viertelj. f. gerichtl. Med.*, N. F., Bd. xlix. pp. 269-281). Liman was led to suggest the investigation owing to his having at one time experienced difficulty in detecting blood in blood-stains on a coat which had been ironed. Katayama's method consisted in exposing blood-stains for one hour, each to a different degree of temperature, varying from 60° (140° F.) to 180° C. (356° F.), and afterward testing the solubility of the blood in various menstrua, viz.: Distilled water, saturated solution of borax, concentrated solution of potassium cyanide, solution of ammonia, dilute solution of caustic soda (one part solution of sp. gr. 1.017 + three parts of water), acidulated alcohol (twenty parts absolute alcohol + one part dilute sulphuric acid), and glacial acetic acid. The depth of color of the solution was noted, and its spectra determined.

The results of the investigation may be thus summarized: (1) A temperature of 100° C. (212° F.), or under, did not greatly interfere with the solubility of the blood in all the solvents. (2) A temperature of 120° C. (248° F.) rendered the blood insoluble in water and solution of borax, but left it slightly soluble in cyanide solution; still more soluble in ammonia and

acidulated alcohol; and most soluble of all in soda solution and acetic acid. (3) A temperature of 140° C. (284° F.) to 180° C. (356° F.) so altered the blood that it ceased to be soluble in cyanide solution, as well as in water and borax solution; but it was still slightly soluble in ammonia and acidulated alcohol, and fairly soluble in soda solution and acetic acid. (4) The best solvents for heated blood-stains are, therefore, the last two named. (5) In the case of stains exposed to the higher temperatures, the only spectrum which the investigator can rely on obtaining, is that of reduced hæmatin or hæmo-chromogen. (6) Crystals of hæmatin may be obtained by the usual method from all stains heated to 120° C. (248° F.), from but two-thirds of those heated to 140° C. (284° F.), and from none heated to 160° (320° F.) or higher.

ARSENICAL WINE.

DR. MARQUEZ, of Hyères, has communicated an account of the wholesale poisoning by arsenical wine at Hyères, to the Société de Médecine Légale (*Annal. d'hyg. publ.*, sér. 3, t. xxi. pp. 74-77, January, 1889), from which it appears that, in the beginning of 1888, over 400 persons exhibited symptoms of a peculiar illness in Hyères and its neighborhood. Some were slightly affected, others more severely. In the former, the symptoms consisted chiefly of disturbances of the digestive organs, pain in the throat, a threatening of coryza, and lassitude. In the latter, the gastro-intestinal symptoms were greatly accentuated, and were sometimes accompanied by fever, vomiting, usually with a little diarrhœa or colic, preceded by dyspnœa and general catarrhal discharges, resembling the symptoms of a true influenza. Pains and cramps were also felt in the limbs, especially in the feet, less frequently in the hands, accompanied sometimes by contractions of the fingers and toes. Bronzing of the skin was also observed, and erythema followed by peeling of the epidermis, with or without ephidrosis, paralytic phenomena, hyperæsthetic or anæsthetic paresis, akinesia, amaurosis, anaphrodisia, metrorrhagia, etc.

The wine of the district was, after a while, suspected as the cause, and was examined, without any injurious ingredient, such as lead, or impure fuchsine, being discovered. The further progress of the illness, however, showed that it was distinctly to be associated with the wine from a particular vineyard, and a more careful analysis of it revealed the presence of arsenic to the extent of six centigrammes per litre (about one-half grain per pint). Inquiry at the vineyard elicited the fact that by accident a barrel of white arsenic, stored for seven or eight years, for the treatment of some vine disease, had been mistaken for a barrel of material of like appearance used in making wine. Dr. Marquez urges greater care in the sale and use of white arsenic.

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ON THE DIAGNOSIS AND TREATMENT OF GASTRIC ULCER.

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IN considering this subject from the practitioner's point of view, I shall avoid recondite pathology as far as possible. But as an introduction to the study of the subject, it is necessary to define what may be called the coarse anatomy of gastric ulcer.

I think that all who have given attention to this matter will recognize the occurrence of at least two polar forms of gastric ulcer; possibly, quite apart from new growth, there may be other forms; but of the two I may speak with a certain amount of confidence.

The first is the deep perforating ulcer most frequently found in young women: an ulcer which typically has purely erosive characters, presenting round or oval outline, penetrating to various depths through the mucous membrane and muscular tissues, having sharp edge, undisturbed by inflammatory thickening, and crateriform shape. Such ulcer, as it penetrates through the walls of the stomach, may open vessels and give rise to hemorrhage, or may traverse all the coats, and open into the peritoneal cavity. The term "perforating ulcer" has often been applied to it, and most appropriately. The site of such ulcer varies; but, for the most part, it occupies rather the median zone of the stomach than either of the extremities; it affects the lines of the curvatures, the lesser more frequently than the greater; but it may be found more frequently on the posterior wall of the stomach. Pathological specimens show that such ulcers may heal, and leave deep, puckered scars.

The other form of ulcer is diffused, comparatively shallow, with raised

or overhanging edges, irregular outline, and uneven surface. It is found more commonly in the right half of the stomach, approaching, in fact, more or less to the pylorus.

The symptoms and associations of the two kinds of ulcer differ in a marked way. The subjects of the first are young women; a very large majority of them, so far as my experience goes, employed in domestic service. As they come before us for treatment they present a curious agreement in their physiognomy. Probably the first thing attracting attention is their anemia. It is an anæmia not by any means associated with emaciation, rarely associated with pigmentation, and on the whole associated with plumpness and transparency of the skin. A large majority of the subjects are, as regards bulk, well nourished. At the same time a large majority appear to be irregular in respect of their catamenial function, chiefly in the way of deficiency. I think we may take it for granted that menstruation is, as a rule, imperfectly established. It is not unimportant to mention that subjects such as these are, with exceeding-frequency, the victims of acute rheumatism.

The SYMPTOMS presented by such subjects when suffering from gastric ulcer may be grouped under four principal heads: First, pain; second, tenderness; third, vomiting; fourth, hæmatemesis.

Pain. The pain is usually not continuous, but occurs after food-taking, sometimes immediately, sometimes after an interval of half an hour, or an hour, or even more. It is generally of a very acute kind, and recurs at a particular spot after every meal, being sometimes limited to that spot, sometimes extending in various directions. Thus, for instance, a pain regularly beginning at a point in the epigastrium will extend to the back and radiate upward over the chest; or beginning in the back may extend upward along the vertebræ, and forward into the epigastrium. During the existence of the pain there is usually much tenderness over the epigastrium, whatever part of the stomach may be exposed to pressure. Should vomiting occur, the pain is subsequently annulled or greatly mitigated.

In well-marked cases of gastric ulcer, pressure over the epigastrium and stomach-area usually produces pain at all times, increased, as has been noticed, when internal pain occurs after food-taking. We shall see presently that such tenderness may be determined by two conditions: first, by ulcer; second, by gastritis; but before going further it may be urged that the tenderness of ulcer is much more acute than that of gastritis.

The importance of vomiting as a sign of gastric ulcer has been variously estimated. Some authors would regard vomiting as a more important symptom; some would rely more upon the character and sequence of pain already described. It is certainly true that many variations in the proportion of the two symptoms are to be observed. But in my

experience vomiting, as an isolated symptom, is less decisive than pain. As a conjoined symptom vomiting has an importance often decisive. When pain has, for instance, already occurred, and has lasted for a time proper to the particular case, vomiting takes place and brings immediate relief. It is true, that there may be many variations in the severity of the pain and the persistence of the vomiting; but both symptoms being present, the meaning of the succession can hardly be doubtful.

The observation of the matters vomited is, of course, an important point in diagnosis. They may consist of food hardly altered; of food partly digested; of food mixed with abnormal gastric juice; of food mixed with mucus in various proportions; and of blood, variously mixed. In other words, we may have such irritability of the stomach as determines at once the rejection of what has been received. We may have next, owing either to the position of the ulcer or to impairment of the action of the stomach, rejection of the food at a later stage of digestion; the rejection being determined, in one case by disturbance of peristalsis, in the other, by the irritation of ill-digested matters.

The presence of much mucus in the vomit will indicate the complication of gastric catarrh, a subject of much importance in relation both to the diagnosis and treatment of gastric ulcer; a subject which we shall have to discuss more fully later.

The hæmatemesis of this form of gastric ulcer has very distinctive characters. It is very rarely continuous, very rarely small in quantity. Our general experience is that women suffering from some of the symptoms already detailed will have once, or once and again, or on several occasions, profuse gastric hemorrhage, bringing them into the jaws of death, but very seldom actually killing them. The blood thus vomited is mostly coagulated, and, by reason of its volume, little affected by the gastric juice. The anæmia of such cases very reasonably leads to the suspicion that hemorrhage in bulk inadequate to the production of vomiting may have occurred often, and may have contributed to the characteristic anæmia.

With the more decisive signs so far considered, young women suffering from gastric ulcer present many secondary symptoms, such as anorexia, excessive appetite for food or depraved appetite, particularly for acids, constipation, or, more rarely, diarrhœa; headaches, particularly frontal; neuralgia, shortness of breath, palpitation, undue pulsation of the abdominal aorta, tinnitus, giddiness, and the symptoms which are grouped under the head of hysteria.

So far we have been getting before our eyes a general view of the aggregate of symptoms. But it must be remembered that there are many variations which are to be observed in each and all of them. The pain, for instance, varies considerably as to time, position, and character. In some cases it arises shortly after taking food, or even during a meal.

There is every probability that such sudden occurrence is induced by a definite position of the ulcer, viz., in the cardiac end of the stomach. Later occurrence of the pain in all probability marks increasing distance in the position of the ulcer from the cardiac orifice. But while inferences drawn from anatomy have a definite value, we have to take into account the conditions of the stomach generally, and also of the patient.

My experience is to the effect that in not a few cases where the localization of pain is far toward the right limits of the stomach, the ingestion of food excites at once the suffering. There is evidently a hyperæsthesia of the whole organ, which may be simple or dependent upon catarrh associated with the ulcer. Where there are much anæmia and much general nervous susceptibility, we may, on the whole, regard the early occurrence of pain as a mark of simple hyperæsthesia. Should vomiting occur we have an important commentary in the character of the egesta. For instance, the absence or presence in varying quantities of stringy mucus will help us to understand the meaning of the early access of pain. I do not refer to these varieties in a spirit of curious observations. In my experience they have important relations to treatment with which I shall deal later on.

Under the head of time of pain we must include duration. In gastric ulcer uncomplicated by inflammation of the stomach the duration of pain is comparatively limited; for the most part certainly it is not felt when the stomach is empty, or comparatively empty; though I must admit there are exceptions to the rule.

A long duration of pain, particularly if it follow vomiting, and, still more, vomiting of much mucus, will mark the existence of much accessory gastric inflammation. The position of the pain varies considerably, sometimes it is in the epigastrium, where a distinct and limited tender spot can be detected by pressure. Often it is felt in the back, so that tenderness is referred to the vertebræ.

The varying conditions of the pain will be, no doubt, generally marks of the position of the ulcer. So, also, will be the attitudes of the patients during the paroxysm. We may well believe that a patient having gastric ulcer will instinctively assume such a decubitus as will obviate pressure of ingested food upon his or her tender point. Accordingly if the ulcer is, as it very commonly is, on the posterior wall of the stomach, the patient will be found lying prone or semi-prone, with the knees drawn up. I have seen several cases in which patients, complaining of violent pain in the back after food-taking, assumed such an attitude. The limits of my paper are too short to follow out other attitudes, and I will not discuss this point further.

In considering the symptom of vomiting we find, in the first place, that, as in the case of pain, the period at which vomiting occurs may, to a certain extent, indicate the position of the ulcer. Early vomiting

after food goes, as early pain, to indicate a cardiac position. Late vomiting, and, still more, vomiting occurring after several successive meals, would tend to localize the ulcer in the pyloric end of the stomach. In these latter cases the amount vomited is usually very large, appearing often to be in excess of what has been previously introduced into the stomach. To repeat, the relative importance of pain and vomiting as signs of gastric ulcer is, as I have noted, by no means uniform.

On the whole, I should be inclined to attach a higher importance to the pain than to the vomiting, while urging that every case has to be examined by itself in all its bearings.

As regards hæmatemesis, I have already noticed that in this form of gastric ulcer it occurs at long intervals and in large quantity. Here, however, qualifications are needed—hæmatemesis does not occur at all in many subjects of gastric ulcer. The non-occurrence of hæmatemesis, however, does not preclude the occurrence of gastric hemorrhage, particularly where vomiting is less marked than pain. Several times I have been able to verify the appearance of melæna where no blood was ejected by the mouth. It appears to me probable that melæna is more frequently present than identified, and that it sometimes contributes largely to the anæmia belonging to this class of disease. The occurrence of “coffee-ground” vomiting is decidedly rare in this form of affection, but where vomiting is severe, and much mucus is brought up, streaks of blood may be observed in the mucus. These probably belong rather to gastric catarrh than to the gastric ulcer itself. In the few cases of “coffee-ground” vomiting, accessory symptoms are generally present, suggesting deep extension of the ulcer to surrounding organs after the formation of adhesions. Here generally the history of the case elucidates its meaning.

In some cases, after the persistence for a considerable time of the average symptoms, either pain or vomiting or both will become generally more constant and less definitely related with food-taking. The signs of gastric catarrh will be aggravated, and very often strange variations of appetite will obtrude themselves. These generally consist in depravation rather than loss of appetite, and lead us into new ground.

I may quote a case in point. A lay-sister in a home presented, for several years, recurrently the ordinary signs of gastric ulcer. At length the pain became persistent, and had constant tenderness associated with it. Vomiting became exceedingly frequent, and blood was often present. The patient steadily developed an inordinate appetite, and a curious predilection for one kind of food. For several years she took nothing but mashed potatoes freely enriched by butter. Feeling pain and craving, she would call for this. She would partake of it freely, and feel, for an hour or so, comforted. No other food and no medicine afforded any similar relief. She was in the habit of rejecting this

magma between an hour and two hours after taking it. Her distressing conditions at once returned, and she promptly took another instalment. The process was repeated from eleven to fourteen times in the twenty-four hours. Seeing that this patient had, in the earlier stages of her illness, the ordinary signs of gastric ulcer, and investigating her later symptoms, I came to the conclusion that the ulcer or ulcers had penetrated deeply, and had led to adhesions between the stomach and adjoining organs, with the result that the walls of the stomach were prevented from collapsing when that organ was empty. Perhaps one of the uses of a paper such as this is to raise side issues of interest.

Physiological observations and general experience go to show that when the walls of an empty stomach are prevented from coming into contact, sensations of extreme hunger arise. A converse practical illustration is afforded by the fact that a tight girdle placed over the stomach diminishes the intensity of hunger in people who are not able to obtain food. I have seen one remarkable case, illustrating, to all appearances, the effects of impossibility of the stomach to contract inducing excessive hunger. An elderly gentleman was under my care for several years. He was literally the shame and opprobrium of his family by reason of his vast and inconsiderate appetite. He was accustomed to eat voraciously of whatever was set before him, with a special selection of the richest possible dishes. That he vomited freely after such indulgence made no difference to him. His one object in life seemed to be to fill his stomach, and to clog it with what might seem to be most oppressive. I had the opportunity of making a "post-mortem" examination, when it appeared that, as a result of an old abscess connected with the gall-bladder, adhesion had occurred between the stomach and all surrounding parts. When the abdomen was opened, the stomach was found to be not a movable viscus, but a large, permanent cavity, firmly bound to the adjacent organs, as if nothing like a peritoneum had ever existed. The smallest diameter of the cavity was at least two to three inches, and no pressure could have brought the mucous surfaces into contact. In the case of the lay sister I have mentioned no "post-mortem" was permitted; but the two cases were so parallel in their symptoms that I think there can be little doubt of the application.

DIAGNOSIS.—In the differential diagnosis of this form of gastric ulcer, at least three or four conditions, producing somewhat similar symptoms, have to be excluded. First, gastritis, acute and chronic; second, malignant disease of the stomach; third, the functional disorders of the stomach comprehended under the term dyspepsia; and, lastly, in a few cases, the acute dyspepsia or gastric crisis of locomotor ataxy.

To compare, in the first place, the signs of gastric ulcer with those of gastritis, acute or chronic, we may notice important differences in the character and duration of the pain. In gastritis we find an epigastric

distress of a constant character, markedly contrasted with the evidently induced pain of ulcer. The distress consists in a sensation of oppression, distention, and heart-sinking, of course more pronounced in acute gastritis, the subjects of which complain of a feeling which they describe as "bursting." In addition to these sensations, pain belongs to all three conditions; constant and grinding in acute gastritis, more or less constant in chronic gastritis, though here the milder form of the pain enables us to see that it is aggravated by food-taking. But in either case it is not relieved by vomiting. Vomiting is present in all three; constant in acute gastritis irrespective of food; frequent in chronic gastritis, usually some time after food-taking; present or absent in ulcer; when occurring therein, giving a relief far more marked than in the inflammatory conditions. The character of the matters vomited will be, in the case of acute gastritis, inflammatory. There will be little food, much tenacious and adhesive mucus; streaks of blood; and as the process advances an intermixture of pus. In chronic gastritis still much mucus, not adhesive, yellowish or opaque, this either alone or mixed with food. Mucus occurring in the vomit of ulcer will generally indicate the existence of chronic gastritis.

Palpation enables us to recognize very different forms of tenderness; this is considerable and constant in acute gastritis, very light pressure over any part of the stomach-area producing great distress. In chronic gastritis there is diffused but dull tenderness, brought out only by comparatively deep pressure, but sufficient to make the wearing of a closely fitting dress a cause of considerable discomfort. The more acute and localized tenderness of gastric ulcer has already been noticed.

There are one or two more signs of minor importance. In acute gastritis we may expect to find marked rise of temperature, headache of considerable intensity and constancy, mainly frontal in locality. Thirst as of the desert, a very foul and usually dry tongue, and a fetor of breath almost as proper to the affection as the scent of a particular flower. In chronic gastritis there is rarely pyrexia, headache is common but intermittent, and the other symptoms cannot be spoken of seriously. In gastric ulcer all this group, except headache, are usually absent, and headache, if occurring, is frontal, and coincides in time with the other symptoms.

We may next contrast gastric ulcer with the graver malady, malignant disease of the stomach. Pain is, of course, a very frequent symptom of this affection; pain mostly increasing in severity as the disease advances, and comprehending many varieties from dull to acute. It may be aggravated after meals, or it may attain its greatest intensity when the stomach is empty. But its extension is usually much larger than that of gastric ulcer. Vomiting is common, and while having a certain relation to food-taking, occurs at all sorts of intervals. There

is very often ineffective retching when no food has been taken. In considering the characters of the matters vomited, we cannot avoid thinking most of the symptom of hemorrhage, but in the first place we may notice that the vomit, whenever occurring, is usually of a strong acid reaction, and that, besides mucus, there is generally a considerable quantity of fluid, evidently a secretion of the stomach. As in the case of ulcer, the position of the new growth goes far to determine the period at which vomiting takes place; and I think it cannot be doubtful that the character of the ejecta is very much determined by the position and character of the new growth. What we see thrown up by a patient having an ulcerating new growth in the middle of the stomach, is assuredly of a very different matter from what is observed in scirrhus of the pylorus. I think, though I should not like to be too dogmatic on the point, that the acidity in both cases is excessive.

The elements of this acidity have attracted a good deal of attention of late in France and Germany. It is asserted that the acidity in cases of malignant disease is due to other substances than the hydrochloric acid which, as is generally believed, forms the main sourness of the gastric juice, various organic acids taking the place of the inorganic. And there are many who to-day believe that the existence of malignant disease, as opposed to non-malignant disease, may be fairly well recognized by studying the reaction of the gastric juice. The test most in vogue is the tetrethyl-diamido-triphenyl carbinol-oxalate, or vivid-green salt, a crystalline substance of a brilliant green color, which yields, when dissolved in water, a blue solution. Hydrochloric acid being added to such solution, effects a distinct color-change to the green. The organic acids fail to produce such a change. In applying the test, a solution of hydrochloric acid, of the strength found in gastric juice, is first applied to some of such solution in a test-tube; next, to an equal quantity of the same solution, contained in a test-tube of equal size, an equal quantity of the fluid filtered from the vomit or withdrawn from the stomach is added. A comparison of the contents of the two tubes will determine the comparative amount of hydrochloric acid present in the secretion of the stomach under investigation. It is strongly urged that a marked failure in the production of the green change is indicative of malignant disease.

During the last year, I have submitted this test to observation wherever it was possible, and have certainly obtained some interesting results; but not uniform enough to justify me in accepting the reaction as decisive, and these were cases of short previous duration, which got well under treatment, and went out without any other sign of malignant disease.

One of the difficulties of color-tests and solutions is, that the vomit in cancer very often contains blood; when this addition occurs, it is usually constant, and while, of course, varying in quantity, is not generally large.

It is mostly in the "coffee-ground" form, but sometimes in the form of small, variously colored clots. This, of course, stands in great contrast to the large hemorrhages at long intervals occurring in gastric ulcer of the young adult female.

To revert here in greater detail to an interesting point relating to the quantity of matters vomited: As in ulcer, where the malignant growth is at the cardiac end or the middle of the stomach, the intervals are short, and the amount brought up is comparatively small; but in growths near the pylorus or involving it, intervals as long as twenty-four hours, or more, are observed. The amount when vomited is very large, and the matter consists of a thin fluid with a sediment of digested matters, having a reddish-brown color. Such a vomit is generally teeming with *sarcina ventriculi*.

Tenderness is mostly found in malignant disease of the stomach. It may be acute or dull, and I believe that the intensity is very much determined by the position of the growth as well as by its nature. I believe that the ulcerative forms are the more tender, and I have certainly felt many pyloric tumors which were almost insensible to pressure. On the whole, however, tenderness, when existing, is much more diffused than that of gastric ulcer.

If we review what has so far been stated in the point of diagnosis between malignant disease of the stomach and gastric ulcer, save and except the chemical action of the gastric juice, nothing actually decisive has been put forward. The real test is the presence or absence of tumor, and the true method of diagnosis is to examine the epigastrium with the greatest care. As far as experience goes, tumor, if existing, can be felt in about seventy per cent. of the cases. The existence of a well-defined tumor, in association with more or less of the symptoms enumerated, will enable us, for the most part, to make a definite diagnosis. The tumors which escape manipulative detection are doubtless such as are situated on the posterior aspect of the stomach. Though they may here elude direct recognition, they still produce many of the symptoms described, and by pressing on deep-seated structures will introduce new signs enabling us to recognize their position.

In the final diagnosis, we have to remember that the simple gastric ulcer affects, for the most part, young women who are anæmic, but not cachectic; that cancer affects older persons of both sexes, who are generally cachectic in appearance, and have pigmentation of the skin as well as anæmia. It may be noted also that, in malignant disease of the stomach, variations in the size of that organ are much more common than in ulcer. The importance of such variations, however, will be better seen when we come to the consideration of the diffused gastric ulcer.

The various functional disorders of the stomach, comprehended under

the term dyspepsia, often simulate gastric ulcer. The two symptoms, pain and vomiting, may, in functional disorder of the stomach, be conspicuously present, but they are rarely present together. When present individually, they rarely have the same marked relation with food-taking as is observed in gastric ulcer, and if any tenderness is observed, it is not localized, and is associated with general hyperæsthesia. There is, of course, no tumor, no hemorrhage, and no fever; moreover, there are usually present associated conditions of general nervous debility, or local irritations, which may favor or determine disordered action of the stomach.

Let us turn now to the diffuse form of gastric ulcer, observed more particularly in middle-aged persons of both sexes. The symptoms here again are mainly pain, tenderness, vomiting, and hemorrhage. But the subjects are no longer simply anæmic, and, on the other hand, well-nourished; but are often cachectic and wasted. The pain is, as a rule, much less acute than in the other form of ulcer, and the vomiting much more frequent and distressing. Tenderness in the locality of the stomach and in the whole stomach-area is generally present. The matters vomited are generally intensely acid, and very frequently contain blood, either in the "coffee-ground" form, or as soft clots of various color from pink to black. Such cases present, indeed, the strongest appearance of the existence of malignant disease of the stomach, and the more favorable diagnosis can be determined only by the absence of tumor, and the favorable results of treatment.

In illustration, I may quote two cases. The first was that of a gentleman, aged sixty-four, who consulted me for a pain in the epigastrium which made his life miserable. It came on at all times, had no relation to food-taking, and when it came took, as he said, "all the life out of him." He had no vomiting, and no other symptoms of dyspepsia, and had no tumor or tenderness. I prescribed many remedies calculated, as I thought, to relieve pain; but he was no better for any of them; so I took him to Sir Thomas Watson, who prescribed citrate of iron, regarding, apparently, the symptoms as neurotic. Under the citrate of iron he speedily obtained relief, which lasted for nearly a year. Then a relapse occurred, and to pain was added vomiting, occurring at intervals, large in quantity, and with evidences of the presence of blood. Although no tumor could be detected, more than one physician came to the conclusion that he had malignant disease. His sufferings lasted several years. Eventually he died, after an operation for stricture of the urethra; and on post-mortem examination a large, shallow ulcer, presenting no signs whatever of malignant disease, was found at the pyloric end of the stomach, but not involving the pylorus. The case has been, for me, always most instructive.

Let me quote another case. About two years ago, a man was admitted

into St. Thomas's Hospital for gastric hemorrhage. He was a horse-keeper, and had had a severe jerk from the ground, when putting a bridle on a horse. The jerk was followed by severe pain in the region of the cardiac end of the stomach, and by frequent but small hemorrhage. He had suffered from gastric distress and occasional vomiting for some time previous. When I saw him, he had pain after food and subsequent vomiting. Blood was always present in the matters vomited, but not in large quantity; there was tenderness over the whole stomach-area, but no tumor could be felt. He was sent to me with a diagnosis of cancerous disease of the stomach. He was emaciated, anxious-looking, but not cachectic; nevertheless, on the whole, all his symptoms suggested malignant disease. But as I could feel no tumor, I ventured to hope that he had only gastric ulcer, and not the more serious malady. I treated him on this basis, and in three weeks he had lost all his local symptoms and had gained flesh. It is not necessary, at this moment, to enter into the details of treatment, inasmuch as I shall presently deal with them; but it may be said that he became well nourished and strong, and has frequently presented himself since, in all respects fit for work.

In many cases of this form of ulcer, gastric hemorrhage presents itself as a very serious symptom. It goes on from day to day, in addition to other symptoms and has a distinct and dangerous importance of its own. The blood often has a bright color and a spongy consistence. The reaction of the vomit is generally intensely acid. In some cases I have been inclined to associate, with the hemorrhage, the idea of an erosive action exercised by an intensely acid gastric juice. In two cases of the kind, under my care in St. Thomas's Hospital, the exhibition of alkalies has been followed, first, by cessation of the hemorrhage; second, by the disappearance of the symptoms of gastric ulcer.

PROGNOSIS.—Dr. Brinton, writing about thirty years ago, calculated from the statistics available at the time, that perforation occurred in between 13 per cent. and 14 per cent. of the cases of gastric ulcer.

There can be no doubt that his book on the subject led to a more general recognition of the disease than had before existed. Whether it be, that, instructed by his writings I, for one, have been more ready to recognize the symptoms of the affection, or, that the character of the affection varies in successive decades, I am bound to say that comparing the number of cases presenting the symptoms of gastric ulcer and the number of deaths recorded, the proportion of deaths is much smaller than that arrived at by Dr. Brinton. This perhaps is what might have been expected. When Bright made his first great generalization, everybody who had albuminuria was condemned to death. We have learned in later years to make very different estimation of the symptom of albuminuria. And I think I may safely say of the patients who come

under our care with such signs of gastric ulcer as Brinton and his contemporaries described, very few die.

TREATMENT.—We may now turn our attention to the subject of treatment, which seems to me to be of the highest importance in gastric ulcer. The people who die of the disease are generally such as have been pursuing their occupations in spite of suffering and without precaution. Here and there, I think very rarely, one will die of hemorrhage; now and again one will die of the signs of perforation. But I think that if we can once bring a patient under thorough hospital treatment, such dangers may be averted; although in advanced conditions we can never overcome the adverse influences of adhesion of the stomach to other parts, and deep ulceration.

My experience of the treatment of gastric ulcer leads me, in the first place, to attach great importance to simple physical rest. A physician is commonly called upon to deal with two very distinct classes of cases: first, those occupying beds in hospital; second, those consulting him at his own house, or coming as out-patients. The in-patients, kept in bed, and debarred from all movement that can be avoided, make much better progress than the others who are moving about. I must admit that, in private practice, I have experienced great difficulty in keeping patients as completely at rest as I could wish, and that the results of treatment of them are far less satisfactory than those obtained in hospital. I commend this point to general practitioners, who have much greater opportunities of following the patients' symptoms from day to day, than are open to the consulting physician. In practice, I hold it to be right that the consulting physician should always advise the patient to secure the care of a medical man near at hand, and under his guidance to carry out the first principle of treatment—physical rest.

Next comes physiological rest. No one can doubt that all mechanical indigestibles must be forsworn. All experience shows that, in relation to the comfort of the patient, meats, uncooked food of all kinds, all mechanical indigestibles, and stimulants must be forbidden. After this large excision, idiosyncrasies of the patient have to be considered. Some can take milk and eggs, and soft farinaceous foods with impunity, while meat juices irritate them. Some can take the meat juices and not the milk food. Some can take nothing whatever without great suffering. Those who can take the milk and egg foods may leave us easy on the subject of their nutrition. Those who can take only the meat juices have but imperfect sources of nourishment, and in these cases, as well as in those cases wherein no aliment can be taken without pain, we are compelled to administer aliment by the rectum.

Of late years a good many nutrient suppositories have been invented, and have been much vaunted. They have a certain advantage in being more easily retained than fluid enemata, when the rectum is irritable.

But, in a general way, I believe that fluid enemata are much more effective. They should consist of from four to six ounces of beef-tea and milk in equal proportions, with a drachm of Berger's "liquor pancreaticus," and should be prepared at a temperature of about 98° Fahr. Egg may be in certain cases added, and, where there is great exhaustion, a small proportion of brandy. In more than one case of gastric ulcer with severe symptoms, I have used such enemata for a month, allowing nothing to be taken by the mouth save water, with the result that the nutrition of the patient has actually improved.

As regards treatment by drugs, I venture to say that generally very good results may be obtained. The treatment must be a good deal determined by the proportion between the symptoms of gastric ulcer and of those symptoms supplemented by gastric catarrh. Supposing that we have the symptoms of gastric ulcer without gastric catarrh, I am in the habit of giving twenty grains of carbonate of bismuth with ten grains of carbonate of soda, and ten drops of tincture of belladonna, three times a day. If there be much sign of gastric catarrh, what I am accustomed to call Brinton's mixture, viz., ten grains of bicarbonate of potash, three grains of iodide of potassium, and three drops of dilute hydrocyanic acid in infusion of gentian, three times a day, is prescribed. The use of this mixture for a week or a fortnight will generally subdue the catarrh, and the subsequent use of the bismuth mixture rarely fails, in uncomplicated cases, to effect a cure.

Complicated cases will be generally much relieved by this, but rarely cured. By complicated cases I mean those to which I have already alluded, in which there are signs of adhesion or of deep ulceration. We must not forget the acute complication of hemorrhage and perforation. In the treatment of persistent small hemorrhage, I am not inclined to the use of astringents. As a rule, I should rely on a careful examination for the symptoms of the case, and should direct treatment to the removal of the causes of hemorrhage, rather than use astringents in a blind way. I should use methods for the reduction of gastric congestion, for the neutralization of the excessive acids of the gastric juice, for the relief of hepatic congestion.

In the large hemorrhages of the simple ulcer, the whole business is generally over before treatment can be instituted. But this does not mean that treatment is unnecessary. A large quantity of blood will have generally made its way into the intestines, where it proves a source of great irritation demanding instant relief. It is my practice to administer, according to the needs of the case, sulphate of magnesia, or sulphate of soda, with dilute sulphuric acid—a hinderer of decomposition—at intervals of two or three hours, until free evacuation has been obtained. These alkaline sulphates appear to me to be the most suitable aperients in all cases of gastric ulcer complicated by constipation.

Given early in the morning in warm water, they lend effective aid to the operation of the mixtures already mentioned.

In what I have said I have given from individual experience. There are some physicians who advocate the use of caustics, such as sulphate of copper and nitrate of silver. There are others who advocate the use of opium and astringents; but all I can do is to tell what, in no inconsiderable experience, has appeared to me to be the most effective mode of treatment.

I should like to add a few words on the value of iodide of potassium in the treatment of gastric catarrh, whether simple, or complicating ulcer, or complicating malignant disease. Administered with the addition of some bicarbonate of potash or soda, it is, in my experience, a drug of inestimable value. It speedily removes a simple catarrh. It thereby removes the primary obstacle to the treatment of ulcer; and, in malignant disease, it will often, for a time, so far mitigate the symptoms as to make the patient think he is being cured. I have often found it in malignant disease relieve the patient for a time, and, I think, prolong life, with marked diminution of suffering.

It will be observed that I have dealt with gastric ulcer clinically, as I undertook. The subject of the diagnosis of gastric ulcer must be constantly in the mind of the practitioner of medicine. It has been much in my mind for years. And what I have put on record here, crude and elementary as it is, represents much careful thought and long observation.

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STUDIES ON THE ETIOLOGY OF THE PNEUMONIA COMPLICATING DIPHTHERIA IN CHILDREN.¹

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THE classification of the inflammations of the lungs has assumed a new phase since the improved methods of studying the bacteria have become definitely formulated and widely practised. While formerly morpho-

¹ The statistical data on the frequency of the disease, the clinical history of the cases, and most of the children's lungs made use of in these studies have been furnished by Dr. Northrup. The microscopical and experimental work was done by Dr. Prudden.

logical distinctions, either gross or minute, between the different forms of inflammation were ardently sought after and minutely detailed, the pathologist is now disposed, while still cherishing the approved morphological data, to seek for the etiological factors which more or less definitely determine the varying phases which inflammations of the lungs may assume, and upon these to base, at least, a provisional and supplementary working classification.

Thus it has been found that that common and well-defined form of pulmonary inflammation called acute lobar pneumonia is, in a large proportion of cases at least, associated with and no doubt directly induced by the growth in the lungs, when the conditions are favorable, of a diplococcus known as the *Diplococcus pneumoniae* of Fränkel and Weichselbaum. This bacterium, as appears from the researches of Sternberg, Fränkel, and others; is a not uncommon denizen of the mouths of healthy persons.

In the new etiological classification of inflammations of the lungs, then, acute lobar pneumonia is an inflammation usually induced by the *Diplococcus pneumoniae*, and presenting in general those clinical gross and minute features which have long been known and frequently described. This form of pneumonia, while so frequently lobar in its extent and distribution as to justify its name, may, nevertheless, develop in various atypical ways, and occurring, as it sometimes does, in lobular form has still been found to be associated with the same bacteria. Whether in inciting this disease the bacteria always find access to the lungs through the upper air-passages, as seems most probable, or occasionally from the blood, we cannot yet positively say.

While, furthermore, it seems well established that the *Diplococcus pneumoniae* is the most common primary bacterial etiological factor in the ordinary acute lobar pneumonia, it is not unlikely that some other forms of bacteria, particularly the pneumo-bacillus of Friedländer, may occasionally incite the disease and cause typical symptoms and lesions.

Another form of inflammation of the lungs, protean in its phases, is that which occurs directly or indirectly under the influence of the *Bacillus tuberculosis*. That the bacteria of tuberculosis, in a great many cases at least, gain access to the lungs with dust in the inspired air, is well established.

Still another form of pulmonary inflammation, as viewed from the etiological stand-point, is the so-called embolic pneumonia induced by the lodgement in the pulmonary bloodvessels and their subsequent growth in the lung tissue of bacteria, more commonly the pyogenic cocci, brought from some other part of the body.

In these well-defined forms of pulmonary inflammation the inciting species of bacteria have been identified by cultures over and over again by various observers, so that their nature as bacterial diseases may be

regarded as well established. All of these inflammations are liable to be associated with bacteritic inflammations due to the same cause in various other parts of the body (1).

In sharp distinction to these bacteritic pneumonias stands a group of lesions, generally considered more or less loosely as inflammations, which, although sometimes remotely and secondarily, are never directly dependent upon the presence of bacteria in the lungs. Such are the chronic interstitial and intra-alveolar pneumonias, be they anthracotic or cardiac or syphilitic in origin, or due to trauma or some other local cause, such as foreign bodies, tumors, etc. We do not now speak of gummata of the lungs, of the relations of which to bacteria we are still in ignorance.

It is probable that the ordinary so-called hypostatic pneumonias are not regularly associated with the presence of bacteria. The part which bacteria play either primarily or secondarily in gangrene of the lungs is too little known to permit of a definite classification of its varying phases here. It seems hardly necessary to mention here that the lesions of the bacteritic and the non-bacteritic inflammations of the lungs are very frequently associated in the same individual.

While definite and positive researches by the improved culture methods have justified us in such a grouping as indicated above of certain of the more common bacteritic, in distinction from the non-bacteritic pneumonias, there is still a considerable number of phases of the inflammatory process in the lungs, especially those large and important groups known as the secondary lobar or lobular and broncho-pneumonias about the direct inciting cause of which we as yet know very little.

These phases of inflammation are apt to occur under a great variety of conditions as complications of other disorders. While we know a good deal about the conditions under which they most frequently occur, the bacterial studies upon them by the modern methods have been so few and so desultory that it is at present impossible to say definitely whether bacteria do or do not stand in a causative relation to many or most of them.

In acute lobar pneumonia, the clinical history, lesions, and complications of which are so well defined and typical, the presumption is decidedly against more than one species of bacteria being the common and ordinary inciting cause. On the other hand, in the lobular and broncho-pneumonias, both of adults and children, if they are bacterial in origin at all, the presumption appears rather in favor of the hypothesis that there may be many species of bacteria which may serve as the inciting cause of the lesion under different circumstances.

If we make a brief summary of the definite results which have been obtained by the bacterial studies on the secondary complicating lobular and broncho-pneumonias, rejecting for the most part the numerous simple morphological examinations, which are, from the nature of the case,

always incomplete, and considering only those which by the culture methods have led to decisive results, we shall find that while a good beginning has been made, the observations are, on the whole, very incomplete.

That localized inflammations of the lungs may be induced by the presence of anthrax bacilli, by the bacillus of glanders, and by the actinomycosis is well established, though in man in this region these forms of pulmonary inflammation are not frequent enough to be of great practical importance.

There is a form of pneumonia which is a direct propagation of the inflammatory process from the pleura (pleurogenous pneumonia) and which has been proven to be due to the same organisms as those inciting the primary pleurisy.

There are, finally, some isolated observations, not sufficiently numerous and not fully enough controlled by the culture methods to be regarded as very significant, which would indicate the probability that now and then the *Bacillus typhosis* and the *Streptococcus erysipelatos* may, in the course of typhoid fever and erysipelas, obtain a foothold in the lung and induce a more or less extensive lobar or lobular inflammation (2).

In 1886 Weichselbaum (3), in his studies on various forms of acute pneumonia, found a streptococcus in eight cases of secondary pneumonia. Two of these were lobar and associated one with rheumatism and the other with senile gangrene of the leg. The others were lobular, and associated with erysipelas, phlegmonous inflammation of the nose and mouth, progressive paralysis, and nephritis. This streptococcus appeared to him on both morphological and biological grounds to be similar to the *Streptococcus pyogenes* and *Streptococcus erysipelatos*, though he does not positively declare his belief in their identity. He names it the *Streptococcus pneumoniæ*.

Neumann (4) has cultivated from the lungs in a case of simple bronchopneumonia the *Staphylococcus pyogenes aureus* and *albus*.

In 1887 Guarnier (5) found in the lungs of a child dead of bronchopneumonia after measles, by morphological and culture methods, a streptococcus apparently identical with the *Streptococcus erysipelatos*.

In connection with his studies on the etiology of diphtheria in 1884, Löffler (6) made morphological examinations of the lungs of several persons dead of diphtheria. In the typical hemorrhagic broncho-pneumonia of this disease he frequently found streptococci, and not the bacilli which he had found in the pseudo-membrane. As he made no cultures, however, from the lungs, these observations are not of great significance.

In 1885 Fränkel (7) cultivated from the lung in a case of bronchopneumonia complicating diphtheria in an adult, a streptococcus which seemed to him morphologically and biologically identical with *Streptococcus pyogenes*.

Experiments on the artificial induction of lobular and broncho-pneumonia in animals by the introduction of bacteria into the lungs have been made by several observers, and will be considered later in this paper.

It would thus appear from the scattered results which we have gleaned in the literature that the logical procedure in studying the etiology of the secondary lobular and broncho-pneumonias is not to make the attempt at first to investigate every form of the disease which comes to hand under the greatest variety of conditions, but rather to attempt the systematic study of certain well-defined groups or classes of the lesion. One of the best defined, as well as one of the most important of these groups, is the broncho-pneumonia which so frequently complicates measles and scarlatina and diphtheria in children.

In connection with recent studies by one of us on the etiology of diphtheria in children (8) we have made a series of observations and experiments on the broncho-pneumonia which so frequently complicates the disease which it is the purpose of this paper to record.

FREQUENCY OF THE OCCURRENCE OF BRONCHO-PNEUMONIA IN DIPHTHERIA.

Darier (9) in 181 autopsies upon patients dead of diphtheria found broncho-pneumonia in 61 cases.

Talamon (10) in 121 autopsies found broncho-pneumonia in 69 cases.

Schrakamp (11) in 54 autopsies found broncho-pneumonia in 31 cases.

In 195 autopsies upon children dead of diphtheria at the New York Foundling Asylum, well-marked, recent broncho-pneumonia was present in 133 cases.

If we reduce these data to percentages, we see that Darier found broncho-pneumonia in 34 per cent. of cases of fatal diphtheria, Talamon in 64 per cent., Schrakamp in 57 per cent., and Northrup in 68 per cent. On the whole, then, we may say that so far as these statistics go, broncho-pneumonia is present in fatal diphtheria, as a complication, in about 55 per cent. of the cases.

These data, however, have but a limited significance, since a careful microscopical examination of the lungs of children dead with diphtheria of the air-passages shows that there may actually be a considerable amount of lobular inflammation without gross change. Thus, in the 195 New York Foundling Asylum cases there was a considerable number of lungs in which there were areas of localized congestion or hemorrhage or collapse, which a microscopical examination might have shown to be associated with slight inflammatory changes, but which, owing to the uncertainty, were not counted among the pneumonias. This condition of affairs would seem to indicate that the above percentage is low rather than high.

SEVENTEEN CASES OF DIPHThERITIC BRONCHO-PNEUMONIA
EXAMINED.

These cases have been described more fully in the paper on diphtheria above referred to, so that here only those details are given which bear directly on the subject in hand. But it should be borne in mind that, as already recorded, cultures as well as microscopical examinations were made of the pseudo-membranes in all of them, and the *Streptococcus diphtheriæ* was found, usually in large numbers, in all except Case XIV.

Cases I. to XIV., inclusive, were from the New York Foundling Asylum. Cases XV. and XVI. were from the Randall's Island Infant Asylum. Case XVII. from private practice.

CASE I.—Male, three years two months. Diphtheria following rectal abscess; death on fifth day. Autopsy: Voluminous firm pseudo-membrane in larynx, trachea, and larger bronchi. Moderate amount of broncho-pneumonia, with large involvement of bronchi. *Bacterial examination of lungs*: Small numbers of cocci and diplococci in bronchial exudate as well as in the air-spaces. *Cultures* showed large number of *streptococci*; a few *Staphylococcus pyogenes aureus* and a few stout, round-end bacilli with scattering forms.

CASE II.—Male, seven months. Diphtheria following pertussis; death on fourth day. Autopsy: Moderate amount of pseudo-membrane in trachea and larger bronchi; this in the bronchi was much softened. Broncho-pneumonia, involving right lower and part of middle lobe. *Bacterial examination of lungs*: Large numbers of cocci in bronchial exudation, and enormous numbers, single and in chains, in exudation in air-vesicles. *Cultures* show vast numbers of *streptococci* and a few *Staphylococcus pyogenes aureus*.

CASE III.—Female, two and one-half years. Diphtheria; death on seventh day. Autopsy: Pseudo-membrane in pharynx, larynx, and trachea; old and fresh broncho pneumonia in both lower lobes posteriorly. *Bacterial examination of lungs*: In areas of old broncho-pneumonia no bacteria were found. In the fresh bronchial exudation, as well as in areas of fresh and commencing consolidation, enormous numbers of cocci, single, paired, and in chains. *Cultures* from areas of fresh broncho-pneumonia showed great numbers of *streptococcus* colonies and a few of *Staphylococcus pyogenes aureus*.

CASE IV.—Male, three years. Diphtheria following pertussis, with albuminuria and broncho-pneumonia on third and fourth day; death on eighteenth day after commencement of pertussis. Autopsy: Softened membrane in large and small bronchi, with considerable old and moderate amount of fresh broncho-pneumonia. *Bacterial examination of lungs*: No bacteria found in areas of old consolidation. In the bronchial exudate, as well as in the areas of fresh consolidation, large numbers of cocci, single, double, and in chains, with a few scattering forms. *Cultures* show large numbers of *streptococci* from bronchial exudate and from areas of fresh consolidation; also a few *Staphylococcus pyogenes aureus*.

CASE V.—Young child. Diphtheria, followed by broncho-pneumonia, accompanied by umbilical phlegmon. Autopsy: Voluminous membrane in larynx, trachea, and bronchi; congestion and broncho-pneumonia in

both lower lobes. *Bacterial examination of lungs*: Enormous numbers of cocci, single, paired, and in chains, in bronchial exudation and in contents of air-vesicles in consolidated areas. *Cultures* show vast number of *streptococci* and considerable number of *Staphylococcus pyogenes aureus*.

CASE VI.—Young child. Diphtheria, followed by broncho pneumonia. Autopsy: Moderate amount of pseudo-membrane, very slight amount of fresh broncho-pneumonia, considerable amount of old broncho-pneumonia. *Bacterial examination of lungs*: In bronchial exudation few cocci and scattering bacilli; very few cocci in areas of commencing consolidation in lungs. *Cultures* show moderate number of colonies of *streptococci*, considerable number of *Staphylococcus pyogenes aureus*, and many stout bacilli.

CASE VII.—Young child. Diphtheria with umbilical phlegmon. Autopsy: Pseudo-membrane in larynx, pharynx, and trachea, loosening and softening below. Considerable amount of fresh broncho-pneumonia in both lower lobes. *Bacterial examination of lungs*: In exudation in air-spaces, largely made up of red blood-cells, enormous numbers of *streptococci*. *Cultures* show large numbers of *streptococci*, *Staphylococci pyogenes aureus*, and a considerable number of scattering forms.

CASE VIII.—Female, three years eight months. Diphtheria following measles; death on sixth day. Autopsy: Softening membrane in trachea, extending into bronchi. Both posterior lower lobes red and mottled with solid areas. *Bacterial examination of lungs*: Considerable atelectasis with a little exudation in scattered regions. The smaller bronchi in the affected regions are filled with pus-cells, and desquamated epithelium, mingled with a large number of cocci, single, paired, and in chains. In the air-spaces adjacent and belonging to these affected bronchi the air-vesicles are filled with cellular and granular exudation, intermingled with cocci, single and in chains. *Cultures* show large numbers of *streptococci*, with a few *Staphylococcus pyogenes aureus* and some scattering forms.

CASE IX.—Male, two and one-half years. Diphtheria; death on eighth day. Autopsy: Pseudo-membrane in pharynx and larynx; no broncho-pneumonia evident to the naked eye. *Bacterial examination of the lungs*: Acute bronchitis with considerable exudation in some of the smaller bronchi. Large numbers of *streptococci* mingled with the exudation in the lumen of the inflamed bronchi. In the bronchioles, air passages, and air-vesicles nearest to the inflamed bronchi and belonging to the same systems were enormous numbers of *streptococci* and single cocci. In the air-vesicles a few desquamated epithelial and pus-cells and granular material were intermingled with the bacteria. In this case we seem to have a very early stage of the broncho-pneumonic process. *Cultures* show considerable numbers of *streptococci* and a few scattering forms of bacilli.

CASE X.—Female, one year. Diphtheria of pharynx and tonsils; enterocolitis; death on third day. Autopsy: Small amount of firm pseudo-membrane on pharynx, tonsils, and at the upper end of œsophagus. Both posterior lower lobes of the lungs show congestion and a moderate amount of scattered lobular consolidation. *Bacterial examination of lungs*: Consolidated areas in the lungs are mostly due to old broncho-pneumonia with much exudation in the smaller bronchi. In fresh exudation a few cocci were found intermingled with the cells, while in the areas of old consolidation none were discovered. *Cultures* from

the redder areas of pneumonia showed a few *streptococci*, a few *Staphylococcus pyogenes aureus* and *albus*, and some scattering forms.

CASE XI.—Female, two years. Broncho-pneumonia with apparent recovery, followed by diphtheria of the pharynx and fresh broncho-pneumonia, with death on second day. Autopsy: Irregular consolidation of the left lower lobe with congestion. *Bacterial examination of lungs*: The broncho-pneumonia was found to be largely old, but in places the exudation was fresh, accompanied by considerable congestion. In the areas of old consolidation no bacteria were found. In the air-spaces containing the fresh exudation a considerable number of streptococcus chains were found. *Cultures* from the lungs showed large numbers of *streptococci*, a considerable number of *Staphylococcus pyogenes aureus*, and a few scattering forms.

CASE XII.—Male, three years. Diphtheria following scarlatina, tubercular peritonitis; small patch of pseudo-membrane at the base of the tongue and in the larynx and trachea; softening below. Autopsy: Both lungs showed scattered areas of congestion and partial consolidation. *Bacterial examination of lungs*: Microscopical examination of the lung showed that the consolidated areas were in large part due to the old pneumonia, while in the congested parts there was a moderate amount of fresh exudation and enormous numbers of streptococci, often forming large masses of snarls or chains. *Cultures* from pneumonic areas in both lungs showed vast numbers of *streptococci*, considerable numbers of *Staphylococcus pyogenes aureus* and *albus*, with a few stout bacilli.

CASE XIII.—Diphtheria, with death on third day. Autopsy: Pseudo-membrane in the pharynx, larynx, trachea, and bronchi; firm and voluminous. Moderate amount of consolidation in both lower lobes of the lungs. *Bacterial examination of lungs*: Very few scattering cocci were found in consolidated areas and in bronchial exudation. *Cultures* of consolidated areas in the lung show a large number of *streptococci* (pure culture).

CASE XIV.—Male, three and one-half years. Enterocolitis, diphtheria, intubation; death on third day. Autopsy: Moderately firm pseudo-membrane in the larynx; small amount of broncho-pneumonia in both lower lobes. *Bacterial examination of lungs*: Moderate amount of exudation in spots in the lungs, but only a very few scattering forms of bacteria, mostly stout bacilli. *Cultures* from the lungs showed considerable numbers of *streptococci*, and only a very few scattering forms.

CASE XV.—Diphtheria following measles; death on seventh day. Autopsy: pseudo-membrane in larynx and trachea; tubercular bronchial glands; consolidation of both lower lobes of the lungs; pleurisy. *Bacterial examination of lungs*: Considerable old broncho-pneumonia. In new exudation a moderate number of cocci. In areas of old broncho-pneumonia no bacteria were found. *Cultures* of the lungs show a large number of *streptococcus* colonies, a few of *Staphylococcus pyogenes aureus*, and scattering forms.

CASE XVI.—Diphtheria following measles; death in twenty-four hours. Autopsy: No pseudo-membrane; commencing broncho-pneumonia. *Bacterial examination of lungs*: Moderate number of cocci, single and in chains, in the exudation. *Cultures* show many *streptococcus* colonies and a few scattering forms.

CASE XVII.—Female, two and one-half years. Diphtheria with early development of constitutional symptoms, tracheotomy, death. Autopsy:

Voluminous pseudo-membrane in trachea; slight broncho-pneumonia. *Bacterial examination of lungs:* Microscopical examination not made, the lungs being destroyed by mistake after the cultures were started. *Cultures* of pneumonic areas of the lungs show large numbers of *streptococcus* colonies and besides these only a few scattering forms.

SUMMARY OF EXAMINATIONS AND CULTURES FROM DIPHTHERITIC BRONCHO PNEUMONIA CASES.

We thus see that the areas of fresh broncho-pneumonia in the lungs of seventeen young children, dead of diphtheria, showed, with one exception, the presence of considerable or large numbers of streptococci. The exceptional case was one in which no streptococci were found in the pseudo membranes. The streptococcus was the only form present in the pneumonic areas with such uniformity and in such abundance as to appear of significance. The streptococci isolated from the lungs in these cases present exactly the same morphological, biological, and pathogenic characters as those of the streptococci found in the pseudo-membranes from the same cases, and which have already been described and called *Streptococcus diphtheriæ* (8).

The reason for believing these bacteria to be identical with the *Streptococcus pyogenes* and *Streptococcus erysipellatos* are set forth in the paper above referred to.

CONTROL CASES.

NON-DIPHTHERITIC BRONCHO-PNEUMONIA.—For purposes of control I have made cultures from the consolidated areas in the lobular and broncho-pneumonia of young children, not associated with diphtheria (10 cases). In two of the cases the pneumonia occurred with whooping-cough, in one with erysipelas, in two with marasmus, in five without any other apparent complication. In only a few of these ten cases have I found either by microscopical examination or by cultures any species of bacteria in considerable numbers, nor were the same species found in the different cases with sufficient frequency to indicate that, whether abundant or not, they were of special significance. Thus in two of the cases there were in the pneumonic areas many of the short bacilli which are common in the mouths of children, and which I have called chain-bacilli, and in four of the cases there were very small numbers of *Streptococcus pyogenes aureus*. The streptococcus was found in only one of these cases.

This exceptional case, the only one out of ten of non-diphtheritic broncho-pneumonia examined in which streptococci, both by culture and microscopical examination, were shown to be present in the lungs, was the above-mentioned case of erysipelas. In this case, however, although the cultures showed large numbers of streptococci in the lungs as well as in the skin, liver, kidney, and spleen, in the lungs the bacteria were only found in the bloodvessels, and never in the exudation in the bronchi or

air-spaces. In this case, then, there was a general infection through the bloodvessels with erysipelas streptococci, and, although present in the bloodvessels of the lungs, they apparently have no relation either in situation or in numbers to the slight amount of broncho pneumonia present.

ACUTE LOBAR PNEUMONIA.—Furthermore, I have made cultures from three cases of typical acute lobar pneumonia in children between two and three years old. These children all died at an early period in the disease, and from the consolidated areas in all of them I cultivated enormous numbers of the pneumococcus of Fränkel and Weichselbaum. In addition to this species, in one of the cases there were large numbers, in another a few, of the *Staphylococcus pyogenes aureus*. Besides these there were only scattering forms. No streptococci were found in these cases.

NORMAL LUNGS.—Finally, I have made cultures from lungs, apparently normal, taken from the bodies of children dead of enterocolitis (two cases), marasmus (three cases). In none of these lungs have I found, either microscopically or by cultures, streptococci. In two of the cases of marasmus, the common fluidifying fluorescent bacillus of water was present in considerable numbers, and in the others only a few scattering forms.

SUMMARY OF CULTURES IN THE CONTROL CASES.

In ten cases of lobular and broncho-pneumonia in children not diphtheritic, in three cases of typical acute lobar pneumonia in young children, and in five cases dead of enterocolitis or marasmus with apparently healthy lungs (eighteen cases in all), the cultures of the lungs showed no streptococci, except in one case of erysipelas with general systemic infection; in six a few *Staphylococcus pyogenes aureus* were present. Besides, there were a few scattering forms, mostly short, stout bacilli, in the various cases.

GENERAL SUMMARY OF CULTURES IN ALL THE CASES.

We thus see that streptococci were present in large numbers in the freshly affected lobular and broncho-pneumonic areas of children suffering from diphtheria in fifteen out of sixteen cases; while in the lungs either normal or pneumonic of eighteen non-diphtheritic children placed under the same sanitary conditions no streptococci were found except in the bloodvessels of a case of erysipelas with general infection.

HISTOLOGICAL DETAILS.

In recording the results of the morphological and biological examination of the lungs in these seventeen cases of pneumonia associated with diphtheria, and placing them in contrast with similar results obtained

from the lungs in non diphtheritic cases, it has seemed wise to give only a succinct statement of the facts elicited. Some histological data have, however, been developed in the various examinations which are not without significance in connection with the general subject of lobular and broncho-pneumonia in young children.

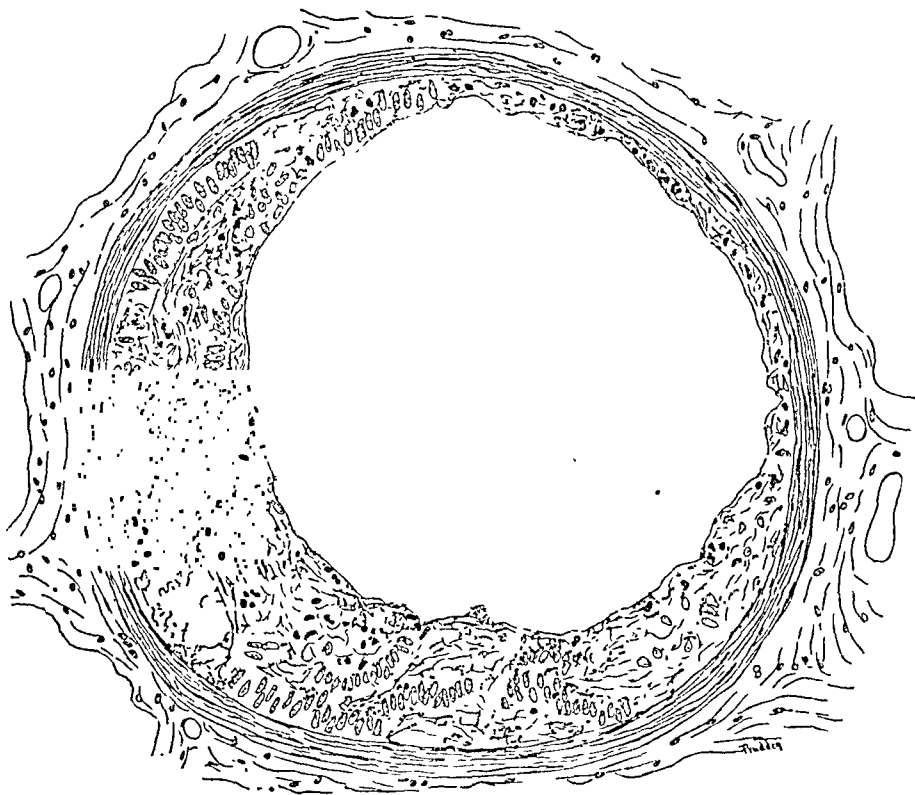
In the first place, in many of the control cases of simple lobular and broncho-pneumonia, of which that subacute or chronic form which is so common in marasmus children may be regarded as typical, neither by cultures nor by morphological examinations can we find evidence that bacteria are present or have anything to do with the lesions. In this form of pneumonia the bloodvessels in the affected regions are apt to be dilated, the walls of both bronchi and air-spaces more or less thickened, and often infiltrated with cells. While the air-spaces contain sometimes a few, sometimes many, large cells, which seem to be desquamated alveolar epithelium, neither blood nor fibrin nor pus is commonly present. This form of pneumonia sometimes is and sometimes is not associated with atelectasis. It appears to correspond in its general nature to some forms of hypostatic pneumonia in adults. Now, in many of our cases of diphtheria occurring in the New York Foundling Asylum this form of lesion was the prominent, and in many of the early fatal cases, was the only lesion evident in the gross examination.

On the other hand, I have found in the lungs of nearly all of the diphtheritic children, sometimes with and sometimes without the above form of lesion, an entirely different type of inflammation. In this inflammation in its well-marked phases there sometimes is and sometimes is not congestion of the bloodvessels in the affected regions. The smaller bronchi are apt to be more or less blocked with pus cells, and the air-spaces to contain in varying amounts pus-cells, red blood-cells, fibrin, granular material, desquamated epithelium, and bacteria. The bacteria in our cases were almost exclusively cocci, and the larger proportion of these were arranged in streptococcus form. These bacteria did not appear to be generally enclosed in the exudation cells, though often clustered close about them; nor were they often found in the walls of the air spaces, but they lay free in the exudation mass or were clinging to the walls of the vesicles. They were present sometimes in very small numbers, but often in enormous quantities.

Not infrequently only a few small areas in the lungs were involved in this way, and these were more frequently in the posterior portions. When markedly hemorrhagic in character, so that the air-spaces contain large numbers of red blood-cells, the involved areas in the gross examination of the lungs appear like areas of localized intense congestion, but they are apt to be lobular in distribution. Atelectasis was rarely observed in the regions involved in this form of pneumonia.

While in the main there is such a degree of inflammation in the

PLATE I.



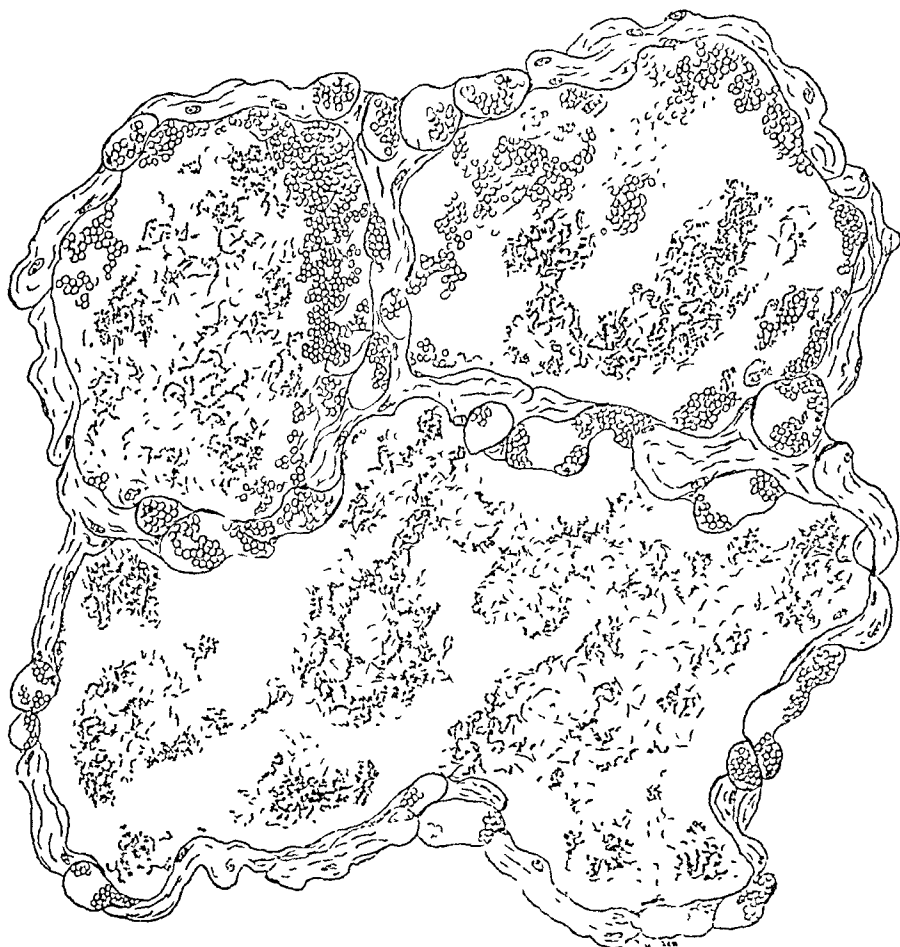
Small branches from CASE IX. Showing exudation with streptococci.





Two adjacent air-vesicles from CASE V. Showing exudation consisting of fibrine, leucocytes, and epithelium, intermingled with streptococci. (The bacteria are drawn proportionally a little too large.)

FIG. 2.



Hemorrhagic form of lobular pneumonia, CASE VII. Intermingled with the red blood cells and granular material in the air vesicles are large numbers of streptococci.

smaller bronchi as to render the designation of broncho-pneumonia applicable to the lesion, there are apt to be in most of the lungs areas of consolidation in which no change in the bronchi can be made out. Such areas of simple lobular inflammation may constitute the entire lesion in some lungs without any participation of the bronchi.

The distribution and general characters of this lesion, whether involving the bronchi or not, would seem to indicate that it is a form of inspiration pneumonia, "*Schluck-pneumonie*" of the Germans. This view is sustained by the observation that it was apt to be most marked and highly developed in children which had died after the pseudo-membranes in the air-passages above had begun to soften and break down.

Not infrequently one encounters in these lungs larger and smaller areas of consolidation in which the exudation is exactly of the same character as that just described, and indicative of an acute inflammatory process, but in which bacteria are entirely absent or, at least, not to be observed by any of the various means commonly resorted to. The explanation of this condition will be seen when we come to the results of animal experiments.

A very marked feature of this form of secondary broncho- or lobular pneumonia with diphtheria is the hyperplasia of the lymph nodes and nodules in and about the lungs. Not only are the larger and smaller bronchial lymph nodes (lymph glands) usually greatly enlarged, but the minute islets of lymphatic tissue (lymph nodules) which are scattered about the lungs in the interstitial tissue, as described by Arnold, are, especially in and near areas of inflammation, so large as to form prominent features in the microscopical sections.

Some of the varying phases of this form of pneumonia and the relation of the tissue to the streptococci are shown in the plates.

In Plate I. is represented a small bronchus from Case IX., in which the epithelium is nearly all detached and, together with mucus, a few pus-cells, and streptococci, forms an exudation mass partially filling the lumen of the tube. The air-vesicles adjacent to this bronchus and belonging to its system of air-spaces contained large numbers of pus and epithelial cells intermingled with streptococci.

Plate II., Fig. 1, shows two adjacent air-vesicles in consolidated areas of the lungs of Case V. In one of these vesicles the inflammatory exudate is largely fibrinous, while in the other there are epithelial and pus-cells. In both the streptococci are present in considerable numbers.

Plate II., Fig. 2, shows three adjacent air-vesicles from the lungs in Case VII., in which the exudate is largely made up of red blood-cells and granular material. Here the streptococci are present in very large numbers.

It should be mentioned here as bearing upon the theme of this paper, that the air of the New York Foundling Asylum while these researches

were in progress, was usually found to contain the *Staphylococcus pyogenes aureus* and *albus*, and in one analysis the streptococcus floated with the dust. Furthermore, the bacterial examination of the scrapings of the mouths and throats of children, both sick and well, who were inmates of the asylum showed that the *Staphylococcus pyogenes aureus* was frequently present in those situations in considerable numbers. While the *Staphylococcus pyogenes* was present in the lungs in a considerable number of the cases of broncho-pneumonia with diphtheria, the lack of uniformity in its occurrence and the small numbers in which it was usually found, coupled with its frequent occurrence in the air and in the mouths of healthy children, would lead us to infer that its presence in the lungs in these cases is of but doubtful significance.

Our observations thus far, then, would seem to justify us in the hypothesis that if the acute broncho-pneumonia which accompanied the diphtheria in the cases which we have examined was bacterial in origin at all, it was probably due to the entrance into the lungs through the bronchi from the local lesion above of the *Streptococcus diphtheriæ*. But plausible as this hypothesis appears to be, it is necessary to have recourse to animal experiments in order to complete its demonstration. To these let us now turn our attention.

ANIMAL EXPERIMENTS.

A good deal of experimental work has been done in the artificial production of lobular and broncho-pneumonia in animals, either by the introduction of irritating vapors or fluids or solids directly into the lungs through the trachea, or by causing the entrance into the air-passages of fluids and solids from the mouth as the result of section of the vagus nerves. To the results of these experiments I need only thus briefly refer, since our theme is limited in scope to the introduction of pure cultures of known forms of bacteria.

I have used in these experiments, which were done exclusively on rabbits, cultures of the streptococci obtained from the lungs of five of the above described cases of diphtheritic broncho-pneumonia. Actively growing beef-tea cultures from two to five days old were used.

Preliminary experiments have shown that the introduction of the streptococcus directly into the lung by a puncture of the thoracic wall, is usually followed by fibrinous pleurisy and localized inflammation of the lung about the point of puncture. But the conditions of infection in this way are so much more complex and so unlike those under which the broncho- and lobular pneumonia of diphtheria in children occurs that the details of my experiments in this direction need not be given here.

INJECTIONS OF THE STREPTOCOCCUS DIPHTHERIÆ INTO THE LUNGS OF RABBITS THROUGH THE TRACHEA.—The mode of procedure in these experiments was to sterilize carefully the skin about the neck, after cut-

ting away the hair, and then having made a small incision, exposing the trachea, to thrust the needle of the injecting syringe through its walls. From one to five c.c. of the beef-tea culture was injected, the small wound washed with sublimate or carbolic solution and bound up. The animals were held upright for a few moments after the injection in order to allow the fluid to run down into the lungs. Usually there was little or no local inflammatory reaction at the point of operation in the neck. Fifteen rabbits were operated upon in this way.

In most cases immediately after the injection coarse râles were heard over the thorax of the animals and in about one-third of the cases there was marked dyspnœa. Three of the animals with symptoms of increasing dyspnœa, loss of appetite, and progressive weakness, died, two on the second and one on the third day after the operation. The remaining animals appeared to recover rapidly from the initiatory dyspnœa, and afterward showed no sign of illness. These were killed at intervals of from three and one-half hours to ten days.

In seven of the fifteen cases no gross lesions were seen in the lungs. In the remaining cases there were larger or smaller areas of localized consolidation and congestion grouped in lobular form about the larger and smaller bronchi. In none of the cases was there evidence of any lesions of the other viscera.

If the animals were killed early—within the first twelve hours—although no gross changes, or, at most, localized areas of moderate congestion were seen, the streptococci could not only be cultivated from the lung tissue, but they were readily seen with the microscope, after staining by Gram's method, scattered here and there in considerable numbers in the air-vesicles, in the larger air-spaces, and in the bronchioles. They lay in part free in these situations, and in part were clustered about the alveolar epithelium. It was not easy to decide whether the epithelium actually contained the bacteria or whether they simply lay on the surface. I have not been able, even as early as three and a quarter hours after the injection of the streptococci into the trachea, to find any of them in bronchi large enough to be lined with ciliated epithelium.

A microscopical examination was made of the lungs of the rabbits which were either killed or died, at the following intervals after the intratracheal injection of the streptococcus, 3½, 12, 20, 24, 28, 40, 60 hours, and 3, 4, 8, 10 days. This examination showed in general that in four out of the seven lungs in which no gross lesions were visible, there was actually a considerable amount of lobular inflammation with more or less bronchitis, and that the same condition prevailed in the lungs which showed gross lesions. But in the latter cases the inflammatory lesions were more extensive and were usually associated with congestion, thickening of the walls of the air-vesicles, more or less atelectasis, and swelling of the smaller bronchial lymph nodes.

Cultures were made in the usual way. In no case were streptococci found in the viscera other than the lungs, and after from twelve to twenty-eight hours they were found in every case to have disappeared from the lungs also.

Before twelve hours I have been unable to find any evidence of inflammation save here and there a moderate congestion of the small veins and capillaries of the pulmonary air-spaces. In animals which died or were killed in from twelve to sixty hours after the injection I have failed to find streptococci either by microscopical examination or by cultures.

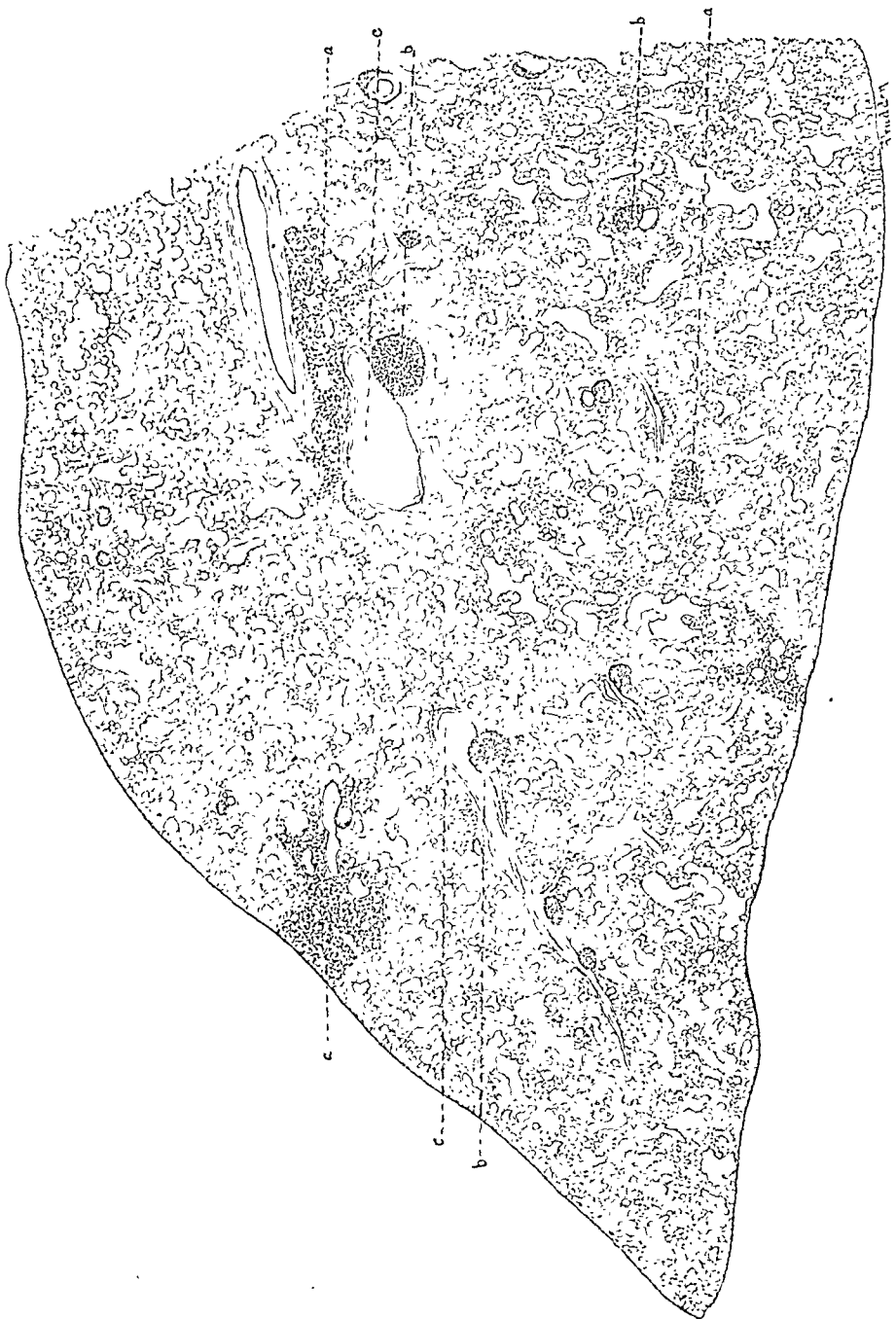
The degree of inflammatory lesion in these animals varies considerably in the different cases. The smaller bronchi may contain pus and the epithelium be loosened and desquamated. The most marked and constant change is the swelling and proliferation of the alveolar epithelium in circumscribed regions. Sometimes only a small cluster of air-vesicles is involved in this way; sometimes the change is to be observed over areas of considerable extent. The air-vesicles are sometimes filled nearly full of new cells, which, from the karyokinetic figures which are to be observed in the nuclei (Plate IV. Fig. 1), I conclude to be derived from the alveolar epithelium. With these larger cells are mingled varying numbers of pus-cells and often a little fibrin (see Plate IV. Fig. 2). The adventitia of the smaller veins in certain regions is apt to be infiltrated with leucocytes (Plate IV. Fig. 1), and the lymph nodules about the smaller bronchi to be much swollen and prominent (Plate III.).

In animals killed after this period—sixty hours—when any lesion at all was found there was apt to be the same kind of exudation in the air-spaces, but the walls of the air-spaces and the smaller bronchi appear thicker than normal, and sometimes with, sometimes without, atelectasis; the lung was dense and firm in patches.

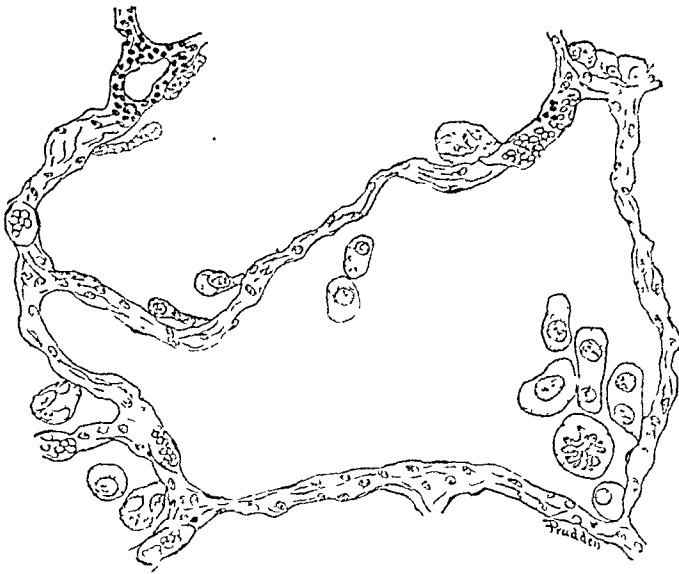
SUMMARY.—It would thus appear that the most common effect of the injection of a moderate amount of the *Streptococcus diphtheriæ* into the lungs of rabbits through the trachea is to cause a well-marked broncho- and lobular pneumonia with hyperplasia of the lymph nodules; that the bacteria disappear early from the lungs, and the pneumonia in many cases is slight in extent and evanescent; but that in a few cases the inflammation is prolonged by an involvement of the walls of the air-spaces.

INJECTION OF THE STREPTOCOCCUS DIPHTHERIÆ INTO ANIMALS' LUNGS WHICH WERE ALREADY THE SEAT OF INFLAMMATION.—In order to learn the effects of the streptococcus when introduced into lungs which were already in an inflamed condition, I have induced in another series of animals both mild and severe inflammation of the bronchial mucous membrane by the preliminary introduction of a few drops either of strong or very dilute solutions of ammonia through the trachea. This

PLATE III.

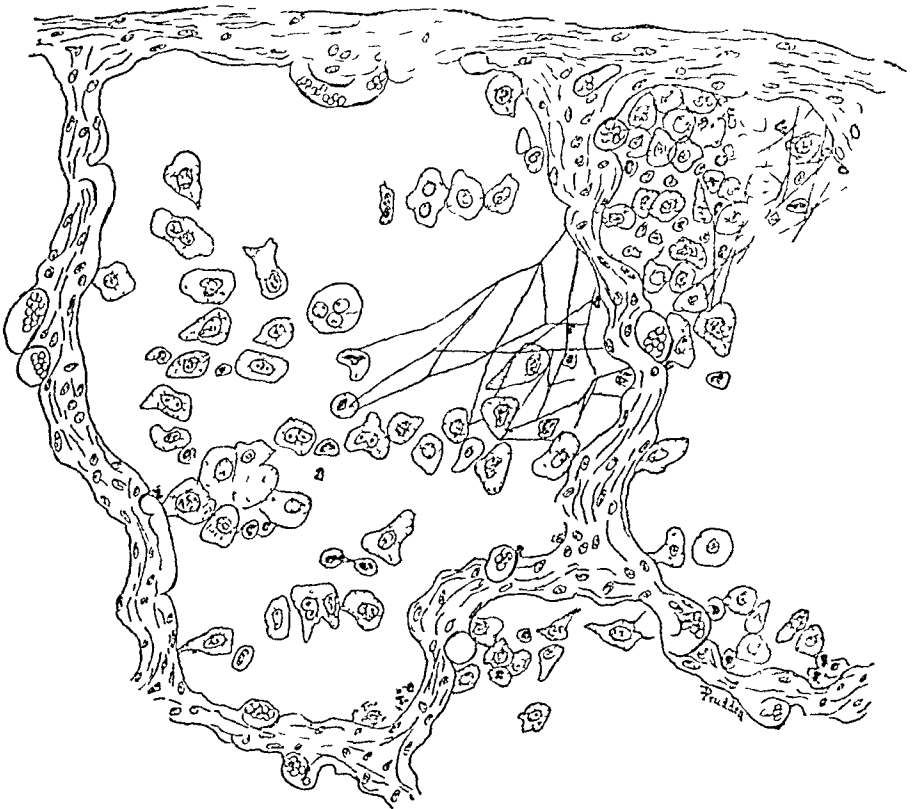


Section from lung of rabbit ten days after injection of the *Streptococcus diphtheriae* through the trachea. *a*, areas of lobular pneumonia; *b*, hyperplastic lymph nodules; *c*, bronchi.



Air vesicles of lung of rabbit dead on third day after tracheal injection of the *Streptococcus diphtheriæ*. Showing proliferation of alveolar epithelium and collection of leucocytes around a small vein. The bacteria have disappeared.

FIG. 2.



Air vesicles from lung of rabbit dead sixty hours after tracheal injection of the *Streptococcus diphtheriæ*. The exudation consists of epithelium, leucocytes, and fibrine. The streptococci have disappeared.

was followed at varying intervals by the introduction of two to three c.c. of a beef-tea culture of the streptococcus.

It is difficult in these experiments to decide how much of the broncho-pneumonic lesions which are almost invariably observed when the animals are killed after from twenty-four to twenty-seven hours are due to the ammonia and how much to the streptococci. For the preliminary experiments on ammonia injections alone showed that a broncho pneumonia very similar in character to that caused by the streptococci alone was almost always induced. The streptococci, of course, formed no part of the exudation in the air-spaces in the cases in which ammonia alone was used. In the animals which had received both ammonia and streptococci, however, the lesions are more marked and extensive, and the bacteria did not disappear so early from the lungs as when the inflammation was induced by them alone.

This fact would seem to furnish another illustration of the well-established principle that certain pathogenic bacteria maintain their existence with greater difficulty in the presence of healthy cells of the living body than when the vitality of the latter is impaired.

COMPARATIVE EXPERIMENTS BY THE INTRODUCTION OF STAPHYLOCOCCUS PYOGENES INTO THE LUNGS.—For the sake of comparison, I have repeated the above detailed experiments on animals, using, instead of the *Streptococcus diphtheriæ* the *Staphylococcus pyogenes aureus*. The cultures used were from three of the cases of broncho-pneumonia, and eight animals were injected through the trachea. Four died at from fifteen hours to three days, and in these, as well as in those which showed no signs of illness and which were killed at varying intervals, a moderate amount of lobular pneumonia was found in every case. Cultures and microscopical examinations showed that the staphylococcus was present in diminishing numbers in the affected regions of the lungs up to the third day. After this none could be detected. The general and minute characters of the lesions are similar to those induced by the injection of the streptococcus, save that pus-cells are apt to preponderate in the exudation in the air-spaces. Experiments similar to these with the *Staphylococcus pyogenes aureus* have been done by Fleck and Laehr (12), who readily succeeded in inducing circumscribed areas of inflammatory consolidation in the lungs of rabbits. They found also that the bacteria, introduced in larger quantities than in my experiments, disappeared in a short time. The appearances which they noted were interpreted as indicating the epithelium and leucocytes in the exudation as the active factors leading to the destruction of the bacteria.

While these experiments with the staphylococcus show that it, as well as the streptococcus, may induce localized inflammation of the lungs, the small number in which they were found in our cases of diphtheritic broncho-pneumonia and the inconstancy of the occurrence would lead

us, as above stated, to the opinion that while they may act as complicating agents, they are not the prominent etiological factors in the disease.

It seems not improbable from some preliminary observations which I have made on the broncho- and lobular pneumonia accompanying measles and whooping-cough, that under these conditions the *Staphylococcus pyogenes aureus* may play an important part in inciting the pulmonary inflammation.

SUMMARY.

We have seen that there is a group of secondary inflammations of the lungs called lobular and broncho-pneumonia, occurring under a great variety of conditions, about the direct inciting cause of which we know very little. Of these we have selected for our studies the lobular and broncho-pneumonia which so frequently complicate diphtheria.

Dr. Northrup has shown by statistical data, derived from the clinical and pathological records of the New York Foundling Asylum and from foreign sources, how frequent and important this complication of diphtheria is.

We have examined morphologically and by cultures the lungs of seventeen children dead of diphtheria complicated by pneumonia. The pseudo-membranes in all but one of these cases had been shown by a previous study to contain a streptococcus, which was, apparently, the cause of the diphtheria. In all but one of the cases of pneumonia the lungs contained a similar streptococcus (it was the same case which was exceptional in both series of studies). We have found no other species of bacteria in these lungs with such frequency and abundance as to justify the belief that it stood in a direct causative relation to the inflammation.

We have been able to induce in rabbits, with the greatest uniformity, by the intratracheal injection of pure cultures of the streptococcus isolated from the children's lungs a lobular and broncho-pneumonia very similar in its character to that with which we started in the children. We have found that the injected bacteria do not, as a rule, gain access, at least in demonstrable numbers, to the blood and the other viscera of the animals.

Though we have no detailed observations to record bearing upon the theory of phagocytosis, we have learned that after inciting the local inflammatory process in the lungs of the animals the bacteria rapidly disappear. This observation seems to explain why, in children's lungs which are the seat of broncho-pneumonia consecutive to diphtheria, we often find the streptococci in large numbers in some of the inflammatory foci, while in others they are few in number or entirely absent.

We arrive, finally, at the conclusion that the acute lobular and broncho-pneumonia which is apt to complicate diphtheria in the upper

air-passages in children, is, at any rate in the set of cases which we have examined, a form of inspiration pneumonia, induced by the Streptococcus diphtheriæ which finds access to the lungs from the foci of diphtheritic inflammation in the air-passages above.

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A CASE OF NEPHRO-URETERO-LITHOTOMY,

WITH REMARKS UPON THE ANATOMY OF THE PELVIS OF THE KIDNEY.

BY S. W. TORREY, M.D.,

OF BEVERLY, MASS.

MRS. M., of Beverly, whose case forms the subject of this paper, began to suffer from pyelitis some time in 1883 or 1884, when she was about forty-three years old. From the beginning up to the time of operation, pus was present in the urine, in varying amount, but never absent; and occasionally there was albumin in small amount; almost always oxalate of lime, and very frequently uric acid crystals. There were no attacks of renal colic, never any very severe pain, but always a dull aching discomfort in the lumbar region. The only medicine that alleviated the trouble much was lithiated hydrangea, which distinctly lessened the amount of pus, and gave some relief to the lumbar aching.

On January 2, 1888, after not having seen the patient for several months, I was called to attend her in an attack of acute bronchial catarrh, mainly affecting the left lung and accompanied by very distressing dyspnoea. Under treatment she was relieved in two days of her harassing cough and extreme difficulty of breathing, when she began to

complain of severe pain in the left renal region, not spasmodic in character, but gradually increasing in intensity until it became agonizing, preventing her from sleeping and from changing her position in bed. The urine, which had been loaded with pus when I was called to her, became quite suddenly clear, and remained so until after the nephrotomy. Soon there developed exquisite tenderness over the left kidney, chills, rise of temperature and pulse, complete loss of appetite, vomiting and uræmic symptoms. by January 6th, an obscurely defined tumor in left side of back. The urine continuing free from pus, but now showing albumin and blood, I inferred that the pus was accumulating in the left kidney, rendering it functionally useless, and that the right kidney was in a state of hyperæmia from being suddenly called upon to do double duty.

January 7th Dr. C. W. Haddock saw the patient in consultation, and agreeing in the diagnosis of abscess of the kidney, he etherized her while I passed a medium-sized aspirating needle through the back into the kidney. I was fortunate enough to strike the abscess on the first puncture, and withdrew three ounces of pus. Temperature 101° at time of aspirating. The next day the patient was comfortable, and the temperature was normal; the tumor was not so easily mapped out, but still could be found; the tenderness on pressure was less, and the uræmic symptoms somewhat relieved, but pus was still absent from the urine.

I then stated to the family that the sudden stopping of this long-continued flow of pus, without a very appreciable lessening of the daily amount of urine passed, proved that the pyelitis affected the left kidney only, and that the urine was coming solely from the right kidney, and that the cause of the obstruction must, almost of necessity, be located in the ureter to insure a complete blockade, and there was nothing so likely to cause this blockade suddenly, considering the patient's past history, as an impacted calculus; and I further stated that I considered incision and exploration of the kidney, with removal of the stone, if found, to be the only means of saving the patient's life.

Further counsel was desired, and on January 12th Dr. A. T. Cabot, of Boston, saw her in consultation. He concurred in the diagnosis and emphatically advised nephrotomy.

On Sunday, January 15th, I operated, there being present and assisting, Drs. C. W. Haddock and Stickney, of Beverly, and Drs. Johnson, Kittredge, and T. L. Perkins, of Salem. I made an incision three inches long in the lumbar region (reaching from the lower rib to the ilium) over the kidney, and on reaching that organ first aspirated the abscess, removing about 5vj of pus. I then incised the kidney and examined the pelvis with the finger, but found no stone; the pelvis was quite small and of a somewhat rectangular shape with two openings on the ureteral side, one at the lower end, about the calibre of a No. 10 catheter; the other about one inch higher up and only about half as large. These openings I searched with a uterine probe, finding nothing in the upper canal, but soon touching a stone in the lower one, about one inch from its opening into the pelvis.

Examination of the stone with the probe proved it to be much too large to draw through the small orifice into the pelvis, and thence through the incision I had made into the kidney, unless the orifice could be dilated. I endeavored to do this with the finger, but with no success;

I also tried to accomplish my object with various instruments, but I could only increase the calibre very slightly.

In endeavoring to dilate by means of a pair of curved short-bladed forceps, gradually expanding the blades, the opening suddenly tore bilaterally, and I then had room to seize and extract the stone. There was only one stone. No hemorrhage of any moment attended any of the steps of the operation. Two rubber drainage tubes were inserted, one into the pouch from which the calculus was extracted, the other in the direction of the upper opening before referred to; each tube was secured in place by a silver wire passed through the capsule of the kidney and out through the skin, thus drawing the kidney in close apposition to the external wound, so as to prevent as far as possible extravasation of the pus and urine into the loose tissues about the kidney. I then irrigated the cavity through the drainage tubes with a solution of chlorinated soda and water 1 : 15, continuing the flushing until the solution returned clear. The external wound was closed loosely with interrupted sutures and dressed with iodoform gauze and absorbent cotton, and the patient put into bed, with hot water bottles to the lower extremities.

There was considerable shock, which gave me anxiety for about two hours, but after that passed off improvement began at once, and there were no untoward symptoms of any sort. The temperature never rose above 98°, and for the greater part of the time was about half a degree subnormal; the urine passed by the bladder in a short time became clouded with pus, showing that the cause of the complete obstruction undoubtedly had been the stone; and the amount of pus, at first quite free through the drainage tubes, soon became much less both through the artificial and the natural outlets, proving conclusively that the old pyelitis had been due solely to the irritation from the stone.

Eight days after the operation I removed the upper drainage tube, and in five days after that I found the other one forced out of the wound, so I took it away and packed the rapidly contracting sinus with iodoform gauze: from that date the discharge diminished very rapidly (I irrigated the kidney daily as long as I could force the nozzle of a syringe through the fistulous canal) and the wound healed with a speed that rather alarmed me when I reflected upon what I had been led to think was the necessary sequel to such an operation—a slow-healing fistula. But as the urine speedily became normal in character, and as the discharge from the wound soon ceased entirely, the evidence was convincing that the removal of the stone had stopped the chronic inflammation, and that the wound had as good a right to heal rapidly as a clean-cut, aseptic wound would have in any other part of the body.

As to the treatment of the case after operation there is little to call attention to. I used Labarraque's solution, 1 to 15, for the first six days, after that a solution of boracic acid, for irrigation; I substituted oakum for absorbent cotton as a dressing, applying iodoform gauze immediately over the incision, and using it to pack the sinus after removing the drainage tubes; and at every dressing I bathed the parts with a solution of corrosive chloride, 1 : 3000. The stone was about the size and shape of a Spanish olive stone— $\frac{7}{8}$ in. long, $\frac{4}{8}$ in. shortest diameter.

In referring to the points of interest in this case I would allude briefly to the question of diagnosis, which is not always easy in these cases, as

has been proved occasionally when operators have incised the kidney with the confident expectation of removing a stone, and none has been found. Fortunately, in this instance, the diagnosis made itself, as I have explained in reciting the history of the case.

Another point is in regard to the shape and size of the pelvis of the kidney, which differed from the generally received idea of its anatomy as delineated by Gray, Harrison Allen, and others, particularly in its having two openings into the ureter instead of one and in being of a rectangular instead of a pyramidal shape.

Shortly after the date of my operation there appeared in *The Practitioner* an article by Mr. Jordan Lloyd, of Birmingham, on the diagnosis of renal stone, in which he states that the anatomy of the pelvis of the kidney, as given in most text-books, is entirely incorrect, and that, instead of being "a funnel-shaped membranous sac," it really consists of a cluster of branching tubes; and that the procedure of exploring the kidney through an opening into the pelvis is only practicable in dilated kidneys, and that the precise arrangement of the pelvis and ureter is as follows:

"The ureter, as it approaches the kidney, enlarges from its normal calibre—about that of a No. 10 English catheter—until it measures from one-third to one-half inch in diameter, and immediately upon entering the hilum it breaks up into two, or sometimes three, primary tubular branches, varying in diameter from a No. 10 to a No. 20 English catheter, and measuring from one-half inch to one inch and a half in length. These, in turn, give off secondary tubes, smaller in size—some less than a line in width—which end in cup-shaped calices. Sometimes tertiary branches, still smaller in calibre, shoot off from these secondary tubes, to end in calyces. With such a conception of the structure of the kidney's interior, many of the occasional difficulties with regard to symptoms, prognosis, and treatment of renal calculus are made more easy to understand."

That this "precise anatomical arrangement" is subject to exceptions is proved by the evidence my finger gave me of a rectangular sac of a capacity of about two fluidrachms, and I do not think I had to do with a dilated pelvis, for the collection of pus could not have had that effect; the kidney contained six ounces of pus at the time of operation, which caused a distention of the capsule of the kidney, filling to their utmost capacity all the tubes and calyces, but the pressure in the pelvis could hardly have been great enough to cause any great alteration in its capacity in so short a time, without also permanently dilating the tubes leading from it, and of that there was no evidence.

This pelvis, differing also from that depicted in Gray, in conformation, and in having two outlets into the ureter instead of one only, made me curious to look into the matter a little further, and I procured, through the kind favor of Professor Fitz, of the Harvard Medical School, two kidneys, both from the same subject, the pelves of which differ from each

other and from that of my case. These kidneys I have drawn (from photographs which I made of the organs) so as to show the arrangement of the pelvis and ureter of each; the illustrations are of two-thirds natural size, and Fig. 1 shows the familiar pyramidal-shaped pelvis of Gray and Harrison Allen, with the loose tissue and the parenchyma cut away so as to show the interior of the pelvis, which is slit open so as to

FIG. 1.



Typical kidney.

give a fair idea of its capacity. Fig. 2 presents the type which Mr. Lloyd considers the "precise anatomical arrangement" of the pelvis, the anatomy is quite different from that of the kidney I operated upon, and an idea of which I have tried to give in Fig. 3, where I have added to Fig. 2 the sort of pelvis my finger mapped out for me when it was hunting for the stone which I finally found in the lower of the two tubes which join in the ureter, as I have shown in the drawing.

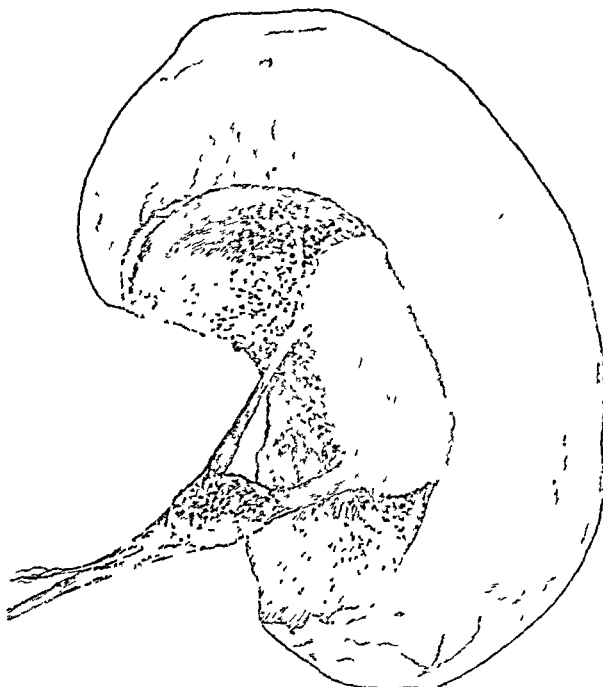
These variations in the anatomy of the pelvis furnish valuable suggestions as to the surgical treatment of stone in the kidney, the first of which is that it is not advisable to incise the organ immediately upon uncovering it, with the expectation of finding a cavity which may be searched by the finger, for there may be no enlarged space, either funnel-

FIG. 2.



Kidney with double ureter

FIG. 3.



Form of kidney found in Case of Mrs M

formed, rectangular, or otherwise; and the knife very likely will sever one or more of the tubes described by Mr. Lloyd, which will materially affect the quick healing of the wound, even if the stone be successfully removed. My own incision was particularly fortunate in not injuring the integrity of the tubes leading from the pelvis, and in part explains the extremely rapid closure of the wound, drainage by the natural channels not being interfered with, as might have been the case if the tubes had been wounded.

The second suggestion, following obviously from the consideration of the first, is that on laying bare the kidney a safer procedure is to explore the organ by acupuncture, using the knife only after locating the stone.

In the March and April numbers of *THE AMERICAN JOURNAL OF THE MEDICAL SCIENCES* for 1888, is an extremely interesting and valuable paper by Prof. Nathan Bozeman entitled "Kolpo-uretero-cystotomy," giving a description of a new method of diagnosis and treatment of chronic pyelitis, and detailing the history of two cases, in one of which the cause of pyelitis was stone. If I do not misunderstand the writer of this paper, he holds, with Gray, that the pelvis is a funnel-shaped membranous sac, which sac, his experiments show him, has a normal capacity of about five drachms; which may be correct for a great many kidneys, but surely not for the type which Mr. Lloyd insists is the only correct one, nor for such a kidney as Fig. 3 shows, where there is no true pelvis.

This error is of practical importance, because it affects the question of diagnosis of renal stone by a method which Prof. Bozeman says is easy and accurate; and which consists in making an artificial vesico-vaginal fistula (I refer now only to females) directly over the orifice of the ureter where it enters the bladder, and then passing a flexible steel sound or a rubber catheter through the ureter into the pelvis of the kidney. Doubtless diagnosis in this way may be easy if the kidney has a true pelvis, and if that pelvis is entered, according to Gray, by one tube only; in such a case the tip of the sound will almost surely touch any stone in the pelvis or in a pouch of the ureter; but if there is the arrangement of tubes described by Lloyd, and no pelvis, I do not see how it is possible to direct the point of a flexible sound working through the entire length of the ureter, so as to enter the several tubes one after the other in the hunt for a stone.

The treatment of chronic pyelitis by Dr. Bozeman's new method, whatever the cause, is irrigation of the kidney by means of an ureteral catheter, and the irrigation is kept up as long as there is any evidence of irritation of the pelvis and tubes. This treatment may give permanently successful results if there is no stone as a cause of the pyelitis, or if there be a stone of small size, or of friable character, located in a position from which it may be dislodged or disintegrated by the irrigating current; but if there are two entrances from the ureter to the pelvis, and the catheter

always takes the one which does not contain the stone (Prof. Bozeman uses a catheter sufficiently stiff to retain the peculiar curve given to it by the ureter on its first introduction, hence if it goes wrong first it is more than likely to keep up the error), the operator may flatter himself, on the disappearance of the pus for several days or weeks, that he has cured his patient, and proceed to sew up the fistula too soon.

Prof. Bozeman says, "By this new method of treatment the patient is exposed to but little danger in comparison to that involved in the grave operations of nephrotomy and nephrectomy." It seems to me, however, that this method, not being easy for any but an expert gynecologist, and, as I have shown, not being infallible either for diagnosis or treatment of renal stone, ought not to be tried where the symptoms point strongly to calculus, but rather that the preliminary operation of laying bare the kidney by the lumbar incision, and the careful exploration of the pelvis and tubes by means of a very fine needle is not only justifiable but preferable; for if a stone is found, and it is the sole cause of the pyelitis, its immediate extraction will probably be followed by a rapid cure, as in my own case; whereas, in Dr. Bozeman's case, in which the cause of the pyelitis was calculus, the patient was under treatment and the fistula discharging for over six months before it was deemed expedient to close it; and as the report is written only five weeks after sewing up the fistula, I think it is too soon to claim a cure.

In addition to the greater facility and, as I think, safety of acupuncture in detecting the stone, the incision into the kidney, which will be necessary for the extraction of the calculus, affords a ready way of irrigating not only the pelvis of the kidney, but, by means of a flexible catheter introduced into the upper orifice of the ureter, of flushing that canal and the bladder also, and emptying all the pus and debris through an urethral catheter into a basin.

I have to say, in conclusion, that I saw the lady who is the subject of this paper a few days ago, and was happy to find her in blooming health, such as she had not enjoyed for years before the operation.

February 25, 1889.

EPILEPSY FROM PERIPHERAL IRRITATION.

CURES BY REMOVAL OF AN INJURED AND DISEASED TESTICLE AND A FOREIGN BODY FROM THE NOSE.¹

BY GUY HINSDALE, M.D.,

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THE following case, which I was called to see in New Jersey, and in which I have been much interested, was admitted by Dr. Weir Mitchell to his ward in the Infirmary for Nervous Diseases; he has kindly placed it at my disposal. The following history was elicited:

CASE I.—Father's and mother's family healthy and free from nervous disease. Mother still living. The patient, a sailor by occupation, has always been a healthy, robust man; he is a Swede, forty-three years of age, and weighs two hundred and fifty pounds. He has lifted nine hundred and fifty pounds. He is a man of intelligence, clear-headed. On February 17, 1888, while loading a vessel, a bale of hay fell ten feet from the dock to the ship's deck, striking him on the right hip and forcing him to the entrance of the main hatch, the edge of which is elevated about a foot above the deck. On this edge he was caught; the pressure was expended in a line running from between his legs to the left shoulder. His right leg was broken. There were severe bruises, but no break of the skin.

The patient cannot say that his head was struck; he was, however, unconscious for half an hour or an hour, and was carried to the cabin. He had probably no convulsion at that time. The fracture was set by a surgeon, and he was sent to the United States Marine Hospital at Portland, Maine. There was great pain in the back and in the left side, and the patient had cramps from the start. The muscles of the left side of the abdomen were drawn up in knots, he says, the size of two clenched fists. He does not think the abdomen was discolored. There was no fever. The pain in the side was relieved in about ten days, but remained in the back.

From the start it was noticed that the left testicle had been forced out of its position; it could not be felt. The right one remained intact. On the eighteenth day he was seized with rather sharp pain running along the left groin into the scrotum. At this time he began to feel queer in the head and left shoulder, elbow, hand, heart, and thigh; not below the knee. He says the side felt heavy, without strength. He could not move it so well; it felt numb and tingled; he felt dizzy in the bed. This alarmed him, and he tried to move the arm as much as possible, but said nothing to the doctor about it.

These attacks of cramps and associated feelings occurred at first twice and then four times a day, and were like the aura subsequently felt at

¹ Read before the Philadelphia Neurological Society, March 25, 1889.

the onset of convulsions. This state of affairs continued without further change for forty-five days, and then the feelings grew worse. The doctor examined him carefully and found that no change in the testicle had occurred since the eighteenth day. After several consultations removal was advised but not done.

Epileptiform attacks had set in by this time, the first occurring on the sixtieth day after the accident. At this time he began to have a painful cramp in the left side. As the patient expressed it, the heart seemed to be squeezed and there was pain in the chest extending up to the left occipital region. He says that he heard a roaring sound; he then fell back in bed unconscious. Those about said he seemed to stop breathing. He was pale at first, and after a few moments began to contract his left side.

There were no violent movements, but he thinks that from what others said his left arm and side became rigid. He ground his teeth, but did not froth at the mouth or bite his tongue. He did not pass urine. He made no outcry as the attack came on. Duration of first about one minute. This was between 7 and 8 A.M.; second attack between 1 and 2 P.M.; third between 7 and 8 P.M.; fourth between 1 and 2 A.M. Two of these attacks were much milder than the first, and more like the attacks to which he had been accustomed.

He left Portland May 17th; having four attacks in twenty-four hours, generally about six hours apart. About May 23d the duration of the convulsions was two and one-half minutes. In all the attacks both eyes twitched, and the face gradually became red and bluish and swollen. He always felt drowsy after an attack, and generally slept one-fourth to one-half hour, but would wake up with more severe pain in the back. Always had an *aura*—pain up left side. Sense of contraction in the left groin; then a strange feeling about the heart, as though about to faint; dizziness in the head; no noises in the ear.

In the passage home his fits increased in frequency; jars seemed to increase them; they were worse on the steamer than on the railroad. In the steamer he thinks he had one every hour; had three in the street in Boston. About the end of June had only two attacks daily. Early in July for two weeks had only one attack daily. They did not respect any particular hour.

July 11th he had three attacks. They have gradually increased in number until Thanksgiving Day, 1888, when he had twenty-three. December 8, 1888, he had seventeen attacks. These all came between 2 and 3 P.M. and at night. His friends say that he turned and twisted about, totally unconscious, taking long, deep breaths. He was raised up for fear of smothering. The patient says he has had in some attacks a dim consciousness of what is going on. This only in the less severe attacks. He thinks that he has heard remarks made. It is said that his hands became clenched, and about the same time both legs became rigid. His face turns red and he grinds his teeth.

Condition—December 7, 1888: Cremasteric reflex present on both sides, but less on the left than on the right. The right testicle hangs lower and is of normal size. Left testicle about one-third size of the right; softer. Scrotum was never swollen. Pressure on the left testicle gives pain, which rising to the left side of head resembles the aura which precedes his attacks, but has never caused a spasm. Pressure below the inguinal canals more painful on the left side. No pain in the penis. Has

had only about four erections since the injury. Never has had sexual connection since accident. Thinks he could not, and thinks it would be too painful. The inguinal regions appear as usual. Pain in sacral region. Gait slow, but otherwise normal. Station normal. Knee-jerk, right, normal; left, diminished and easily exhausted. Diminution of knee-jerk in left was noticed by Dr. Bank, in Portland. Abdominal reflex equal on both sides and easily excited. Heart and lungs normal. Pulse 64; rather feeble. Stomach and bowels in good order. Never had any venereal disease. Sleep wakeful. Dreams occasionally. Has dreams while half awake, at this time has tingling. General health is good. Has not lost flesh. Urine passed three or four times in twenty-four hours; has never been able to make it standing though he has tried half an hour; reaction normal; specific gravity 1015; no albumin. Eyesight growing poor in left eye since he was hurt. Two months after the injury he began to see objects double, and shortly afterward as many as half a dozen images instead of one. He has this symptom every day to some extent. Pupils large; react to both light and accommodation. Left more sensitive to light. Ophthalmoscope shows rather pale fundus; otherwise normal. During his stay at the hospital he had most violent daily fits, always before 8 A.M.

Dr. Mitchell having decided that the diseased left testicle was the cause of the convulsions, on December 29, 1888, Dr. William Hunt removed that organ whilst fully etherized, and just before the first incision was made the patient had a distinct fit. Just before the cord was cut another fit began, but section of the cord caused it to cease.

A microscopic examination of the testicle made by Dr. A. C. Wood, of the University of Pennsylvania, showed atrophy of the glandular structure.

It is now over three months since the operation, and there has been no return of convulsions and no sensations like the aura. Strength has been restored to the left side, which had been very weak. Sexual power is normal. The only disability is from a weak back, which is the result of the severe blow received.

Dr. Charles K. Mills has kindly given me the opportunity to examine a patient of his, who during the late war suffered a severe gunshot wound nearly destroying the left testicle, and who for the last fifteen years has had epilepsy.

CASE II.—The patient, W. S. D., is now fifty-one years of age; no history of epilepsy in the family. The patient has never had syphilis or serious illness, or any blow upon the head. On June 27, 1861, a musket-ball entered the anterior part of the left thigh, eight inches below the crest of the ilium, emerged opposite the left testicle, piercing it and passing behind the right testicle, entering the inner aspect of the right thigh at the scrotal junction, and emerging eight inches below the outer right iliac crest. No bone was broken.

Thirteen years later he had his first fit. It came on without aura or other warning. He made some guttural noise, had convulsions of arms and legs, with movements of the eyes. During the attack he was perfectly unconscious. He had three convulsions the first night. Duration about half an hour, and was very drowsy afterward.

One month later he had a second attack similar to the first. Spasms have recurred at intervals of from six weeks to three months during the last fifteen years. The patient has had as many as eleven in twenty-four hours.

Examination shows an atrophied testicle about one-sixth the size of the right. Cremasteric reflex less in the right side than in the left. There is no aura or feeling referable to the testicles. Pressure on the testicle does not give pain in the head. Sexual power is as good as ever.

It may fairly be questioned whether in this case the injury and the epilepsy are in the relation of cause and effect, but I think that, in the absence of other known exciting causes, and coming on at the age of thirty-six, especially in view of the case first described, this may reasonably be placed in the same category.

Dr. Weir Mitchell has kindly given me the following communication :

CASE III.—The record of the case of epilepsy, which was cured by the removal of a diseased testicle, has recalled to my mind a case, of which, unfortunately, I have no notes, although I retain a vivid remembrance of it.

Many years ago, whilst in attendance as physician at the Pennsylvania Institute for the Blind, I was called upon to see a blind girl about seventeen years of age who was afflicted with epilepsy. The attacks were violent, so that she bit her tongue. After each attack she became unconscious and remained so for some hours. The attacks came on at intervals of not less than two days, and were increasingly frequent when first my attention was called to the condition. The girl was of rather weak mind, and had the history of a fall upon the head, to which the attacks had been attributed. A very careful examination revealed the fact that she had a purulent discharge from the left nostril. In the effort to treat this it was discovered that that side of the nose was completely occluded by a foreign body. This was extracted piece by piece, and was found to be a bean, which, in some foolish play, had been pushed up the nostril and lodged there. It had at one time begun to sprout, but this growth had manifestly been arrested by circumstances unfavorable to its increase.

The removal of the bean and washing out of the nostril with proper astringent solutions resulted in complete cure of the fits. As I remember it, she had one or two after the removal of the foreign body, but no more. These attacks were most positively of an epileptic nature, and they had nothing about them of hysterical quality. They had long been considered incurable. The case is so simple that there is really no more to tell than what I have here so briefly placed upon record.

Of course, these three cases ought to be distinguished from idiopathic epilepsy. They may be designated as eccentric or peripheral convulsions, and belong to the same category as dentition-convulsions, fits from worms, etc.

In the case of the sailor reported it took two months for the changes in the testicle to produce that degree of irritation which caused the fit. There was no special proclivity in the disposition of the patient. The

injured organ, however, produced not only in the afferent nerve but in the centre to which it is attached some interstitial change. Just what it is we are unable to say, but it was sufficient to produce motor impulses along efferent nerves.

The injured and diseased testicle was the cause of the convulsions, but the accompanying irritation was certainly not of a high inflammatory character, the organ being over tender but not actively painful. Peripheral irritations as causes of epilepsy are not necessarily accompanied by sensation. For this reason it is imperative in all cases of apparently causeless repeated convulsive attacks to seek out the points of irritation. It is the treatment of these cases for which there are tangible causes that yield the brilliant results. In an interesting communication made about one year ago on the subject of epilepsy from dental irritation, Dr. A. P. Brubaker recorded such a case, successfully treated by extraction of a carious tooth, and accounts of fifteen similar cases were collected by him.

In the case of the sailor with the injured testicle it was a matter of uncertainty whether or not the epilepsy had not become so engrafted upon the brain as to continue even after the operation. No doubt many cases of so-called idiopathic epilepsy and Jacksonian epilepsy have been reflex in their origin. In consequence of some intense reflex excitation epileptic paroxysms have come on, the cerebral cortex has discharged in a particular way, and this habit of discharge has been fixed upon certain regions of the cerebrum; and in these cases, even after the subsidence of the reflex excitement, and in some cases after the removal of the reflex cause by operation, the epilepsy which has been imposed upon the central nervous system persists. Such a case has been recorded by Dr. Mills.¹ In that instance the patient had fallen at the age of four, striking the head and injuring it. Epilepsy supervened; the convulsions were sometimes without unconsciousness, and always began in a finger of the injured hand, and extended in a peculiar order. At the age of fifteen the finger was operated upon and a neuroma found by Dr. S. W. Gross. A second operation was deemed necessary and was performed by Dr. Hearn. For at least one year the patient had the seizures as frequently as before. They then began to diminish in frequency. At this time, several years since the operation, it is reported that for two years the patient has had no convulsion.

These cases are especially interesting in view of the question of removal of the cortex. The fact that the epilepsy has been originally of reflex origin does not render a cortical operation improper, but it is, of course, not to be considered until a peripheral operation has been tried.

There is in the class of reflex convulsions a form called pleuritic epi-

¹ Trans. International Congress, 1888.

lepsy. It was first described by M. Maurice Raynaud, of Paris, in 1875.¹ It was found that the injection of weak solutions of iodine, chloral, carbolic acid, etc., into the pleural cavity in the treatment of chronic pleurisy was followed by convulsive attacks in certain cases. A partial hemiplegia has also followed such injections, and in other cases followed the convulsions. These reflex convulsions have proved fatal; the result, however, not at all due to absorption of the substances injected. It is stated that after the injection suddenly the face becomes very pale, the respiration is suspended, and the pulse is very small and scarcely felt. Generally the spasms are first confined to the face or arm of the side of the injection, but soon they become general; at first tonic, then clonic and accompanied by profound unconsciousness.

Study would doubtless bring to light many instances of the peripheral excitation of the spasms in so-called centric or idiopathic epilepsy. Echeverria believed that, on the whole, everything warrants us in thinking that in epilepsy the spasm is always induced by peripheral irritations, generally unfelt or not easily discoverable, and that, even without removing the original lesion of the disease, the fits may be subdued as long as all source of disturbance be withdrawn from the nervous system. He gives in a total of 286 a list of 28 cases of epilepsy from peripheral irritation, many of which, however, should strictly not be admitted to that class.

Herpin, whose work was published in 1852, gives no cases as from peripheral irritation in his list of 68.

Reynolds classifies epilepsy from dentition, indigestion, venereal excesses, dysentery, etc., under eccentric irritation, and records 16 cases. Hammond in 572 cases gives 21 as from dentition, 24 from blows on the head, and 4 from peripheral wounds or injuries.

Injuries of the testicles have produced reflex paralysis as well as epilepsy. Such an instance of paralysis from peripheral irritation has been recorded by Dr. Weir Mitchell² as follows:

A sergeant was shot in the right testicle; the organ was almost entirely destroyed by the ball. He fell without pain, believing himself wounded in the back; he then became senseless, but recovered in a few minutes and could walk. The right foot, however, dragged. There was paralysis of the right anterior tibial muscle and peroneus longus.

As a remedial measure for epilepsy in general castration has been advised, and, according to Gowers, has been performed without effect.

¹ H. C. Wood: *Nervous Diseases and Their Diagnosis*, p. 110, 1887.

² Echeverria: *Epilepsy*, p. 206, New York, 1870.

³ S. Weir Mitchell: *Paralysis from Peripheral Irritation*. N. Y. Medical Journal, 1868.

REVIEWS.

THE DIAGNOSIS AND TREATMENT OF EXTRA-UTERINE PREGNANCY. By JOHN STRAHAN, M.D., M.Ch., M.A.O. (Royal Univ. of Ireland). THE JENKS PRIZE ESSAY OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA. 8vo., pp. 134. Philadelphia: P. Blakiston, Son & Co., 1889.

WITH but a very brief interval another work upon extra-uterine pregnancy presents itself for examination. The interest with which it will be received and read, on account of the importance of the subject, is heightened by the fact that it is a prize essay, and has proved successful, over six competing essays, in carrying off the first substantial honors of the William F. Jenks Prize Fund.

A careful and critical examination of the work has produced, we are compelled to say, a feeling of very great disappointment. We say this with the deepest regret. A good, clear work upon this subject is one of the needs of the day. Moreover, we find our opinion widely at variance with that of the Committee of Award, which was composed of gentlemen whose judgment is entitled to the greatest respect—gentlemen of the highest standing and attainments. In their report announcing the award they do not limit their decision to a relative one between the essays presented, but endorse this as one of "remarkable excellence," and a "very valuable contribution." Under these circumstances, it is doubly incumbent upon us to present the grounds upon which our judgment is based so fully and so carefully that our readers may be enabled to decide between the conflicting opinions. In doing so, we plead as sole motor impulses the interests of science and the promotion of knowledge of the subject.

It may be well to present at the outset what, in our opinion, should be the characteristics of an acceptable treatise upon this rapidly advancing subject, especially as it is one upon several leading points of which there are not only diverse, but conflicting, opinions. First of all would stand a due amount of original observation, either clinical, operative, or *post-mortem*. Then would come a treatment of the subject entirely free from the trammels of authority, without bias, and without a shade of that partisanship which has, in a peculiar manner, been developed in regard to some points of extra-uterine pregnancy. Such a treatise should contain a scrupulously fair statement of all sides of the unsettled questions of the subject and of the results attained by different measures of treatment, with such a presentation of evidence as would assist the reader in forming a judgment for himself.

Examined by this standard of requirements, which we cannot think severe, it will not take long to discover how faulty is the essay here presented. First of all, it does not contain one particle of original observation of any kind whatever. There is no pretence of any. Not a line,

not a word, anywhere indicates that the author ever saw a case of extra-uterine gestation, or ever examined one, living or dead. The value of the work, then, as an addition to our knowledge of the subject, is very soon disposed of.

Next, as to freedom from bias or from the influence of authority on the subject. The one marked feature of the book is its devotion to and close following of a recent writer on the subject. That writer is Mr. Lawson Tait, whose lectures upon ectopic gestation were reviewed in this journal two months ago. Mr. Tait's pathology and treatment are given here in full, without change and without addition; his opinions and views are here again presented; and not only these, but some of his weaknesses and his errors. The number of times Mr. Tait's name is mentioned is something marvellous: three times on the first half page of about twenty lines; six times on one page; upon an average, more than once to the page the book through. The doctrines of Mr. Tait are not under consideration here. We should gladly welcome evidence leading to establish some of them, both relating to hematocele and extra-uterine pregnancy, as simplifying much that is now complex, and clearing up much that is obscure. It is superfluous, however, to say that no amount of reiteration of these doctrines, no restatement of them by any number of writers, will cause their acceptance by the profession. And this essay is another presentation of Mr. Tait's teachings and opinions, and it is little more than this. The similarity between some portions of this essay and of the lectures on ectopic gestation is striking. For instance, on page 25 of the lectures, Mr. Tait says: "There can be, there clearly is, from the statements of those who have tried these plans [fœticide by electricity and other means], neither certainty nor safety about them." On page 77 of this essay we read: "The next argument against killing the fœtus is, that there is neither certainty nor safety in any of them. This is confessed by their advocates." If this statement were true, it might be allowed to pass; but it is not true—certainly, not in the general sense in which it is made. We do not know even of any individual confessions of the kind.

Having given these two general characteristics of the book, one negative and the other positive, we will follow the author somewhat closely through one or two portions. Early diagnosis is one of the burning questions of the day. The subject occupies here twenty-one pages, but we do not find it treated with that fulness and clearness which its difficulty and its importance demand. The author is not always consistent, and sometimes contradictory. He opens with the question whether a diagnosis before rupture is possible. The answer is: "Tait practically says no, or that we shall fail so often that it amounts to the same thing." Here we must come to the aid of the master as against the disciple. What Mr. Tait really says—in his lectures, at least—is, that he has never had an opportunity of making a diagnosis at that period, and he expresses grave doubts as to anybody else having made one. But here the author frees himself for a moment from the trammels of authority, and accepts the teaching of facts:

"But in the literature of the subject, of recent date, there are many cases recorded where the diagnosis was made, and verified either by rupture occurring later on, by operation, or by post-mortem examination. I do not argue from cases where cure resulted from some mode of treatment not involving opening the abdomen, although it would hardly seem sound judgment to reject all these." [P. 7.]

The steps of a diagnosis he states to be, to ascertain that the patient is pregnant and then that the pregnancy is extra-uterine. How little hope there may be for our patients, from either surgical or therapeutic sources appears immediately, when he states that "it is impossible to make a diagnosis of pregnancy with certainty till the beginning of the fourth month or the middle of the fifth, when the foetal heart becomes audible" [p. 8]—since rupture of the extra-uterine sac usually occurs before the sixteenth week. This acceptance of the foetal heart-sound as the *sine qua non* of a diagnosis of pregnancy leads to the devotion of several pages to a consideration of new signs which may indicate this condition. Bal-lantyre's sphygmographic tracings are given and Hegar's signs of thinning of the lower anterior wall of the uterus, which the author thinks "would be present to some extent in the extra-uterine variety." Elevation of temperature of the vagina and changes in its color are also considered, and, finally, Rasch's discovery¹ that "pregnancy, uterine, could be diagnosed in some cases as early as the seventh week, and in most cases after the second month, *by fluctuation in some part or corner of the uterus wherever the ovum happened to be located.*" As this sign is again twice referred to, as among our resources, it is evident that the author values it highly, nevertheless he gives no testimony of its practical value, personal or from others. "Some other fluid retained, as menstrual [of course in some part or corner of the uterus!], is the only possible source of error." He says, "One would, of course, require to be thoroughly accustomed to the bi-manual mode of uterine examination." To this proposition we yield cheerful and hearty assent.

"After offering these remarks on the subject of the early diagnosis of pregnancy in general, I have to admit it cannot often be done before the foetal heart becomes audible, before which period rupture usually takes place in extra-uterine pregnancy." [P. 10.]

There is, then, as before said, but a poor outlook for patients. But we should have liked to see here the reports in detail of some of the cases "in literature of recent date," that the reader might see what symptoms enabled the making of a diagnosis previous to rupture. A score of them may be easily found in the periodical literature of this country alone. On page 23 he says: "But certainly the diagnosis [at that period] can be made and has been made."

As to the history of the case, and the belief, on the part of the patient, that pregnancy exists, Dr. Strahan follows closely Mr. Tait, as might have been expected from the latter's pronounced views upon these points. The essayist indulges here in a fling at the "text-books." But it is not alone in the text-books that the value of the patient's belief in pregnancy has been "emphasized." Bernutz and Goupil, who were pioneers in the pathology and diagnosis of this subject, were struck with the frequency with which this feature was present, and Mr. Tait's experience upon the point is altogether singular, as should have been stated.

Dr. Strahan does not omit the consideration of the physical and vital changes in the pelvis consequent upon an extra-uterine pregnancy. The enlargement and displacement of the uterus, the open os, and the formation of a decidua, are duly but briefly considered. No especial stress is laid upon the diagnostic value of the expulsion of the latter. The characteristics of the tumor found upon vaginal examination are all given

¹ British Medical Journal, 1873.

except one. That one is the vascular condition of its walls. The active pulsation to be felt in the walls of these cysts received mention as early as the days of Baudelocque, and it is interesting to any one who will carefully study reports of cases to observe how frequently it has been mentioned as a striking feature. It is not alluded to directly in this essay, but in writing of Dr. Aveling's case [p. 20], it is said there was a "pulsating" tumor near the uterus, and the word is emphasized by italics.

"A rounded, elastic, semi-fluctuant, tender tumor behind and to one side of a slightly enlarged and laterally displaced uterus, if found to be rapidly increasing under circumstances which permit the possibility of extra-uterine pregnancy, could hardly be mistaken for anything else." . . . "If in a week or two the extra-uterine swelling had increased considerably, and shreds of decidual membrane had come away with the metrorrhagia, the case for tubal gestation would be all but complete." [Pp. 17, 18.]

These quotations, taken alone, are certainly satisfactory as to an early diagnosis; there is not a word as to the sound of the foetal heart. But after having made these clear and distinct statements, the author must again present Mr. Tait [pp. 22, 23], with his disbelief in the possibility of an early diagnosis, and his statement that "there are no symptoms in extra-uterine pregnancy before the rupture has taken place." Could devotion of a disciple to master go further than this? He here betrays the feeling, however, that possibly he goes too far in this direction, for on the following page there is a feeble protest, the only one in the book, with the statement that "I do not slavishly follow whatever he may say, unless it is well supported either by himself [!] or others."

"Tait is doubtless too confident in his own unique experience and too sceptical as to the assertions of others. We must remember that he has had only seventy-nine cases," etc.

But Mr. Tait has not, by his own testimony, had a single case for diagnosis in the early stages. What he says, therefore, upon early diagnosis is matter of opinion, of no value when clashing with actual observations.

Some other features of the author's treatment of this portion of the subject must be attributed to the same influence. Thus the infrequency of opportunity to make an early diagnosis is reiterated and dilated upon. But because, in a goodly proportion of cases, there are no symptoms until rupture comes and death speedily follows, are we to give up attempts at diagnosis altogether? Here our knowledge is lacking. We do not know the proportion of the three classes into which extra-uterine pregnancy may be divided: 1st. A very small class which go on to full term without symptoms, and are only discovered at the time of spurious labor. 2d. A larger class without symptoms until sudden collapse and death, between the twelfth and sixteenth weeks. 3d. Those in which general and severe local symptoms cause the patient to call upon a physician before this period. The author of this essay, following his prototype, gives the second class as the "vast majority of cases." We cannot assent to this, and base our dissent upon the number of reported cases in which pronounced symptoms have led to an early diagnosis and treatment. There are no figures to be given on the subject.

Some points in this division of the subject deserve commendation. Menstruation may be variously affected by extra-uterine pregnancy, and this is plainly stated and repeated. There may be either amenorrhœa,

or irregular menstruation, or profuse menorrhagia, or metrorrhagia. This was recognized by Campbell, 1842, and his statement of the fact is here twice quoted. Amenorrhœa is not, then, a necessary symptom of aberrant gestation, and we believe the fact to be generally recognized. It is stated, however [p. 11], that the text-books "usually state that there is an arrest of menstruation." In justice, the author should have given the titles of these text-books. Still, after all, we find him again recapitulating the symptoms [p. 49], giving "a sudden arrest of the menses" as one of them! And again:

"If we happened to have most of the symptoms of even early pregnancy present, and a vascular, growing, semi-fluctuating tumor at the back or side of an enlarged uterus, *with suspension of the menses for a time or two*,¹ and then irregular hemorrhages, with severe crampy pain, the diagnosis would be evident to the simplest." [P. 61.]

The value attached to these points in the history of the case is strangely at variance with what is elsewhere taught that the history is altogether unreliable and misleading. Upon this point compare the following. Writing of the early stages [p. 67] he says: "Contrary to all authors, except Tait, I would impress on the practitioner that whatever may be trustworthy, the *history* of extra-uterine pregnancy is not so." On page 55, writing of diagnosis at a more advanced period, he says: "Without the history of pregnancy it would be impossible to say what the nature of such a pelvic tumor might be." The same discrepancy may be found in the *Lectures on Ectopic Gestation*.

Far more important and valuable is the admonition, given more than once, to make an ally of time. The tumor of extra-uterine pregnancy rapidly changes. "When in doubt, wait" [p. 63], is excellent counsel.

"Doubtful cases must often arise, and the man who would omit patience or time from his list of diagnostics, providing no urgent symptoms arose, would thereby prove his shallowness of intellect." [P. 45.]

The author is correct in the opinion that the source of many errors of diagnosis, made even by eminent men, is to be found in the want of recognition of the possibility of existence of the trouble.

"What we want, above all things, is to have the possibility of extra-uterine pregnancy present to the mind. Without this, the most experienced will almost always go wrong." [P. 17.]

Further remarks of the same tenor [pp. 26, 62] are excellent. Ought not the fact that it is only of late that the attention of the profession has been strongly directed to this subject, inspire charity for errors of diagnosis which have been made in past, but not distant, days?

Enough ground has been gone over to show the manner in which the author has executed his work. The space occupied precludes entering at length upon an examination of other portions of the book. The different modes of treatment in the early stages, the efficacy and the results of the application of electricity, are most interesting subjects, but there is not space to enter upon them. It is the less necessary to examine these subdivisions here, because the author follows Mr. Tait so closely that if the reader does not happen to have this essay he can read the lectures on ectopic gestation, and it will be very nearly the same. The author

¹ The words italicized are not in italics in the original.

is generally, however, far more courteous to those from whose views he dissents. But we are sorry to find that he is not always unexceptionable in this respect. "It seems to me that Dr. Baldy has quite snuffed out the electrolysis party—that is, if they needed any snuffing out" [p. 89]. This is neither dignified nor generous. By "electrolysis party" the author undoubtedly means all those who use electricity for the destruction of foetal life, and assuming that there is such a "party," what has it to show in the way of results? Thirty-nine successful cases (without puncture) with but one death after application, the death evidently not dependent upon the electricity.² It is most surprising that the essay contains no record of cases treated by electricity in this country later than the fall of 1886, when the number was only fifteen. The number now and the results are strikingly similar to those of Mr. Tait's operations for ruptured cyst—forty cases, two deaths. Now a "party" which can furnish such results as this scarcely deserves "snuffing out," even were the process possible.

The author follows Mr. Tait in his objections to electricity with singular fidelity, even to the mention of single cases, such as those of Dr. Buckmaster and Duncan Matthews. He is frank enough to say, however, that he knows of no evidence tending to show that the placenta may continue growing after the killing of the foetus [p. 75]. The only sound argument adduced against this mode of treatment is that rupture of the tube may take place after the vitality of the foetus has been destroyed, as occurred in Dr. Janvrin's case, or that it may even hasten the catastrophe. This granted fully, experience shows that this would be only an exceptional occurrence, and when rupture thus occurs the patient cannot be worse off for laparotomy than before. This part of the subject is sadly marred in two ways: first, by mingling together, in the consideration of electricity as a foeticide, its application during the early weeks with that after the fourth month or even later. It is true that the author says "the Americans have only used electricity during the first four months," but he nowhere clearly divides the two classes of cases. Second, by the evident influence of the idea that electricity stands in rivalry to laparotomy after rupture. Nothing could be further from the truth.

In one place the author of the essay shows himself magnanimous toward electricity. He speaks of it as "a noble and ingenious effort to do something for a class of cases for which medical science at the time could do nothing" [p. 89]. Its friends now believe it to be efficacious in saving women from the perils of laparotomy. But there are no such perils, according to this essay, and it is curious to see how the author agrees with every other opponent of electricity in minimizing the dangers of abdominal section. "It is a very safe procedure" [p. 90]; it is an operation "of extreme simplicity" [p. 117]; it is "not as dangerous as herniotomy, nor half so difficult" [p. 46]. He thinks it ought to be performed by every country surgeon, and the argument he makes that any medical man could perform this operation if he would only think so, approaches the sublimity of the faith-cure. For comment upon the simplicity of the operation we refer the reader to the technique given in pages 96, 97.

¹ Hawley, N. Y. Med. Journ., June 18, 1888. Brothers, Amer. Journ. Obst., May, 1888.

² Dr. Janvrin's case, Trans. Amer. Gyn. Soc., 1886.

Some portions of this essay are very satisfactory; those on treatment after rupture of the sac, and on the differential diagnosis of extra- and intra-uterine pregnancy may be mentioned. It has, however, numerous and very grave faults. The subject is not brought up to the times in most important particulars. This has already been shown in regard to the number of cases treated by electricity, and in giving the results of treatment of the condition at full term, the child being alive, the important table of thirty cases published by Dr. Robert P. Harris in this journal for September of last year ought to have found a place, but does not. There is evidence of carelessness all through the work. The notice on the fly-sheet, that as the author lives abroad he could not revise his work or read proof, will absolve him from some unfortunate substitution of words which may confuse some readers.¹ But this excuse will scarcely cover others: such, for instance, as his treatment of the antiseptic system, which we are told in one place [p. 70] "has had its day"! while in another [p. 97] a just tribute is paid to its value. But all faults are nothing compared with the author's close following of a single authority, and the spirit of partisanship which only too evidently animates him. This betrays him—we say it with the deepest regret—into misrepresentation, unfairness, and injustice. These are grave charges against an author. They should never be made without specifications. We proceed to specify: It is unjust and unfair to state that those who believe in the early diagnosis of extra uterine pregnancy hold it to be "perfectly easy" [p. 16], or to imply that they believe it can be made *in all cases*. It is unfair to attack Dr. Aveling because he held that the diagnosis of extra-uterine pregnancy is generally easier than that of the normal, and fail to state that this has also been held by other able men on both sides the water. It is a misrepresentation to state that those who make a diagnosis early depend mostly on two things: the presence of the signs of pregnancy and the absence of menstruation [p. 27], and also to say that those "who go in for electricity profess to make the diagnosis off-hand" [p. 24]. It is unfair to quote Steavenson's theoretical objections to the use of electricity as a foeticide, and not give the symptoms before and after its use in a single case of the many successful ones that have been reported. It is unfair to throw doubts on the diagnosis of cases cured by electricity without publishing the reports in detail and indicating the weak points. It is a misrepresentation by implication to write that "no electric current will restrain bleeding from an abdominal artery" [p. 102]. It is grossly unfair to write that "serious accidents have followed the use of electricity even without puncture in an alarming number of instances" [p. 88], without stating what the accidents were or giving reference to the reports of them. It is the height of injustice as well as illogical to quote Dr. Matthews Duncan's case [p. 77], and argue from it against the use of electricity when applied at a very different period of the extra-uterine gestation, and to claim [p. 81] that the issue of any single case discredits altogether any plan of treatment. But then—Mr. Tait did the same. J. C. R.²

¹ Such as rupture for impregnation, p. 12; uterine for peritoneal, pp. 61, 65; foetus for placenta, p. 117.

² It is due to the writer of this review to state that he was not a competitor for the Jenks Prize.—*EDITOR.*

THE EAR AND ITS DISEASES, BEING PRACTICAL CONTRIBUTIONS TO THE STUDY OF OTOTOLOGY. By SAMUEL SEXTON, M.D., Aural Surgeon to the New York Eye and Ear Infirmary; Fellow of the American Otological Society, etc. Edited by CHRISTOPHER J. COLLES, M.D., Assistant Aural Surgeon to the New York Eye and Ear Infirmary. Numerous illustrations. Pp. 461. New York: Wm. Wood & Co., 1888.

IN this work the author has not attempted to present to the profession a treatise on the ear embracing the entire field of otology. He has, however, presented a large number of practical subjects in otology which must be of interest to the general practitioner as well as to the aurist. In studying the functions of the ear and its diseases, Dr. Sexton has avoided a too exclusive consideration of local conditions, with a view to separate treatment apart from the whole, "since otology in its broadest sense should embrace a consideration of the upper air-tract, of which the middle ear forms but a part, and of regions contiguous to the ear."

The author has not always used the term "chronic catarrh" in speaking of diseases of the mucous membrane generally receiving that name, preferring to consider such affections, in many instances, as neuroses. The following affections receive prominent notice in the work before us, and display much careful observation, viz., catarrh of the upper air-tract, oral irritation and diseased teeth, in their causative relation to aural diseases. Then follow the subjects of wounds and injuries of the ear occurring in warfare and civil life, and rupture of the drum-head from boxing the ears, and its medico-legal aspect. Anomalies of audition, noises in the ears and their connection with the hallucinations of the insane, are presented graphically, and the author hopes that many cases of mental aberration due to noises in the head and ears may be more easily recognized, and that a more satisfactory plan in their treatment may be adopted.

Othæmatoma occurring among lunatics, pugilists, and others, has been very fully presented, and will, it is believed, be of special interest to alienists and examiners in lunacy.

The effects of false hearing on singers, actors, lecturers, and musicians are considered, and explained very satisfactorily.

Perhaps the most important part of the work is that devoted to the operation of excision of the drum-head and ossicles for the radical cure of otorrhœa and for deafness due to chronic catarrh of the middle ear, including a full account of the literature of the subject. No one has done so much toward perfecting the technique of this operation, nor in elucidating the indications for it, as Dr. Sexton. Schwartze, Lucæ, and Kessel, in Germany, have done a good deal in this operation, but their accounts are meagre or desultory. "The results of the operation have been satisfactory, and it is hoped that its usefulness will be confirmed by experience."

In regard to "mastoid disease," the author holds that it may often be prevented by favoring drainage from the attic through the lower drum-cavity and external auditory canal. This is far preferable to resorting "to an operation for liberation of secretion through the intact cortex of the mastoid. Of course, where inflamed structures and products of the inflammatory process give rise to accumulations in the mastoid and

antrum, with great suffering from tension through the inaccessible closure of the passage into the tympanum, an opening through the unaffected cortex of the mastoid or posterior wall of the external auditory canal would be indicated. The author has seldom encountered a case of this kind. Such cases must be rare when the previous treatment has been proper."

There are also considered in this work the classification and education of school-children with defective hearing and the effect of high atmospheric pressure on the ears in tunnels, caissons, and in diving, as the increase of submarine labor makes it very important that the effect of such work on the ear be understood. We also find discussed the subject of pension claims of soldiers, sailors, and marines on account of disability from deafness.

The author acknowledges the great aid he has received in the preparation of this admirable book from Dr. Colles, to whose sole efforts we owe the complete index with which the work is supplied. C. H. B.

A TEXT-BOOK OF HUMAN PHYSIOLOGY. By AUSTIN FLINT, M.D., LL.D., etc. With three hundred and sixteen figures in the text, and two plates. Fourth edition, entirely rewritten. 8vo. pp. 889. New York: D. Appleton and Company, 1888.

THIS familiar text-book comes to us in a rather less bulky form than in former editions, and with larger, clearer type and whiter paper. Its arrangement of subjects is upon the old plan, but it requires only a casual glance to show that the author, as he states in his preface, has not merely contented himself with pruning here and there, adding a paragraph or so, and calling it a new edition, but has rewritten much of the contained text.

Dr. Flint is very frank in his preface when he says: "Although the third edition, published in 1880, is still much used as a text-book, for several years I have not been able to follow it closely in public teaching." His students might have added that he required them to read through too much at times to get at the facts in his pages. The medical reader was always delighted to follow him in his descriptions of the first researches and gradual development of anatomical and physiological knowledge of certain parts and their functions, but the student, while seeking for the most recent and exact information, was sometimes impatient of this historical retrospect.

In curtailing much of this matter as found in his earlier editions, the author has also avoided another confusion of ideas which, despite the supposed progress made in the use of the metric system, is still a stumbling-block to the medical student, and the elder practitioner who reads his work will certainly appreciate it—that is, he gives the old system of English weights and measures, with their equivalents in the metric system in parentheses. He adopts the new chemical nomenclature.

Dr. Flint does not consider the value of a text-book as materially enhanced by elaborate descriptions of apparatus and methods, except as

they involve principles of general physiology. We agree with him in his general statement, but think he might to advantage have illustrated his text a little more fully in this direction. We are glad to see the admirable selections from Sappey retained among the illustrations. They undoubtedly added a good deal to the reputation of former editions.

Under "Circulation," in giving the causes of the first sound of the heart, Dr. Flint considers the valvular element to be so definite and positive as not to be entirely controverted by the experiments of Yeo and Barrett (1885), who, as quoted, declare "it is impossible for any tension of the valves to contribute to its production." The last American edition of Yeo (1888) agrees with Flint in this particular by stating "it would appear probable that both the tension of the valves and the muscle are concerned in the production of the first sound." Wherever the study of the capillaries and of endothelium is met with, Flint adheres to his earlier teachings and almost entirely ignores the presence and use of stigmata or stomata. He gives the process of diapedesis, but leaves it to a few words of uncertain import.

Under "Respiration" it is interesting to find that the observations made by Dr. Mays (*The Medical News*, January 7, 1888) upon the chests of eighty-two Indian girls who had never worn tight clothing, are admitted as seeming to show, in opposition to the views of Hutchinson and others, that the predominance of the superior costal type in the female is confined to civilized races, although, as a saving clause, the author considers that females accommodate themselves most readily to this type, which is probably provisional in its nature as protective against the influence of pregnancy upon the respiratory organs.

In considering "Alimentation and Digestion," testimony additional to that of Hayes as an Arctic explorer is quoted from Greely (1887), regarding the use of alcohol: "The regular use of spirits, even in moderation, under conditions of great physical hardship, continued and exhausting labor, or exposure to severe cold cannot be too strongly deprecated."

In considering the size, shape, etc., of the stomach, we should like to see noticed the statements of Leuf (*The Medical News*, April 16, 1887) that this organ, in the normal position, has its pyloric orifice not more than an inch to the right of the median line; and his description of the tubular form assumed at times by the stomach, would seem to deserve attention in the discussion of this subject. In this division of the work the diagrammatic plates of Sappey on glands and follicles have happily given place to others more in accordance with histology. It would have been well if this had been adopted also in treating of the intestine. The examination of the feces claims considerable attention, and Pasteur's study of the microorganisms and the part they play in actual digestion receives consideration. Our author repeats his consideration of stercorine and its formation from cholesterine, affirming that cholesterine does not exist in the normal evacuations; in which statement he is not generally supported by other physiologists.

The definition of the physiological anatomy of the kidneys has been very much improved, and gives a clear and comprehensive view of the subject. The discussion upon urea and its origin remains pretty much as in former editions; in this connection the author accepts the views of Oppenheim (1880) as regards the influence of muscular work upon the elimination of nitrogen, as going far to harmonize the results obtained by different experimenters. Oppenheim concludes that muscular work,

when not carried to the extent of producing shortness of breath, or when moderate and extending over a considerable length of time, does not increase the elimination of urea; but that even less work, when violent and attended with shortness of breath, increases the discharge of urea—*i. e.*, moderate work draws upon the oxygen, and largely increases the elimination of carbon dioxide; violent work consumes the tissues represented by the discharge of urea.

The use of the spleen, aside from the formation and destruction of blood corpuscles, is still considered as unknown, and the theory of its connection with the pancreas in forming trypsin is not thought worthy of notice. The connection between the thyroid gland and myxœdema (Ord) is given, with Horsley's experiments upon the extirpation of that gland in dogs and monkeys. Sappey's illustration of the thyroid and thymus glands, *in situ*, is introduced here to advantage, as so few students obtain a correct idea of their relations.

In considering the "Spinal Cord" much new matter has been introduced, although the reflexes are touched upon in a very general way, and there is no definite reference to the inhibitory fibres, or, in discussing brain centres, to the tubercula quadrigemina, or their influence upon inhibition or emotional expression. The encephalic ganglia, convolutions, and localizations are given very clearly.

Loring has contributed to the section on "Vision" and the visual apparatus, by a clear and comprehensive figure, illustrating his text, on the bloodvessels of the retina, and by his discussion of the researches of Boll, Kühne, and Ayres upon the visual purple and visual yellow.

For the centre of vision Flint adopts the views of Hun—the lower half of the cuneus and the adjacent part of the median occipito-temporal convolution; that the action of the cortex of the convex surface of the temporal lobe is the psychical visual centre; and that the angular convolution is not a visual centre, as it only affects the memories of the appearance of written or printed words.

We have extracted thus far to show the improvement in the work itself; that its author appreciates the general progress made in researches upon physiology; and that his text-book warrants the high position it has always held among books of reference.

W. L.

DE L'HYPERTROPHIE DES AMYGDALES (PALATINES, PHARYNGÉE, LINGUALE). Par le DOCTEUR PAUL BALME. 8vo. pp. 155. Paris: Steinhil, 1888.

HYPERTROPHY OF THE TONSILS. By DR. PAUL BALME.

THIS is a rather pretentious treatise upon a limited subject. The author describes as tonsils all the masses of lymphoid structures grouped in the pharynx and in the base of the tongue. We are of the opinion that the term tonsil should be specifically limited to the tonsil proper. While exception has not been taken to the term pharyngeal tonsil given by von Luschka to the mass in the fornix in the larynx, exception can well be taken to extending the term in describing the masses at the pha-

ryngeal orifice of the Eustachian tube as the tubal tonsil, and the masses in the root of the tongue as lingual tonsil. There would be equally good reason for describing Peyer's patches as the intestinal tonsils, which would be an absurdity, although they have precisely the same structure. Prof. Leidy's simple designation, lymphoid nodules, which describes the structures and indicates their form, is much to be preferred to that of tonsil, which is neither descriptive nor characteristic.

The subject is treated quite methodically. The volume begins with an anatomico physiological study of the structures in question, followed by an exposition of their pathological anatomy. Then comes a clinical study of the physical signs, functional disturbances, varieties, course, prognosis, and diagnosis; short chapters on etiology and on treatment respectively; and succinct notes of thirty-one observations, chiefly personal. The principal point of interest that we note is the fact that the author has observed in the feeble-minded and idiotic inmates of the Colony of Vaucluse marked hypertrophy of these lymphoid structures and especially of the longitudinal groups which are found behind the posterior palatine folds. Out of 113 inmates, 56 presented either adenoid vegetations or enlarged tonsils, or more frequently both conditions; to which granular pharyngitis was added, veritable columns of adenoid tissue along the posterior and lateral walls of the pharynx. The author believes that the congenital obstruction of the nose in these subjects renders these tissues more accessible to exterior agents and places them in a condition which predisposes to hypertrophy. He believes that the facial and skeletal deformities so often accompanying the condition are but part and parcel of the same physiological deficiencies, and not results of the hypertrophies of the adenoid structures. He has seen similar facial and cranial deformities coëxisting under similar conditions in intelligent families; but, strange to say, limited to those children who have inherited the father's nose, retracted or rudimentary for two or three generations, while their brothers and sisters who have inherited the nose of the mother were free from adenoid hypertrophies.

The treatment recommended for enlarged tonsils is excision with the amygdalotome in children from two to five or six years of age who cannot support ignipuncture, and electropuncture in all others; this being the practice followed by Ruault, whose lead the author seems to have followed throughout. The main cause of hemorrhage in amygdalotomy is duly recognized in accidental section of the palatine folds. To avoid this, the selection of an instrument is urged with a ring not large enough to risk embracing the fold in any given instance; and the avoidance of pressure against the fold during the section of the tonsil. Both hints are exceedingly valuable. Ignipuncture with the electric cautery is recommended after the method employed by Ruault, chief of service in the laryngological clinic at the Parisian Institute for Deaf-mutes. The electrode consists of a long loop of thick platinum wire pressed into a very blunt point. The battery is strong enough to bring this loop to a white heat for a length of about two centimetres. It is to be pressed into the tonsil in such a manner as to transfix it from before backward parallel to the lateral wall of the pharynx; care being taken to secure two apertures, one of entrance and one of exit, so as to avoid penning up any consecutive inflammatory products. Four to six cauterizations are made in each tonsil at a sitting, and from three to six sittings suffice at intervals of ten or twelve days. The procedure is usually exsanguinous;

and slight bleedings are restrained by reapplications of the cautery at a red heat. Febrile reaction follows in some cases, with after-pains and dysphagia. Projections remaining after subsidence of the hypertrophic condition are treated by electric cauterizations of the surface.

Adenoid tumors of the rhinopharynx are excised in several sittings with cutting forceps, and any remnants are scraped off with curettes sharpened laterally at their superior surfaces; a practice which is most commendable. With very young and indocile children chloroform is administered, the mouth kept distended, a position chosen to favor free discharge of the blood, and the endeavor made to complete the operation at one sitting. Hypertrophied lymphoid nodules of the tongue are treated by applications of the electric cautery.

Dr. Balme has thus written a reliable monograph which is evidently the outcome of considerable literary research, and some close personal observation; and which, while presenting but the single novelty mentioned in connection with etiology, accords with the anatomico-pathological and therapeutic views entertained by the majority of physicians who are practically familiar with the subjects discussed. J. S. C.

TRAVAUX D'OBSTÉTRIQUE DU DOCTEUR A. AUVARD, Accoucheur des Hôpitaux de Paris. 3 vols. 8vo. pp. 524, 572, 539. Paris: Lecrosnier et Babé, 1889.

OBSTETRIC WORKS. By DOCTOR A. AUVARD.

THESE volumes contain a collection of monographs on many different subjects in obstetrics, without the slightest connection with one another, and arranged without any attempt at classification under general heads. Some of them have already been published in French journals. These are contained in Vol. I. The second and third volumes contain articles published for the first time.

The papers indicate great industry and close observation. Many of them will be of value to the students of obstetrical literature. That these volumes, however, will meet with a large circulation, we doubt. The articles, many of them on comparatively unimportant subjects, are too long for the general reader. There is, on the one hand, too much with which any educated obstetrician is perfectly familiar, while on the other hand, the work is too voluminous for the undergraduate in medicine. The style in which much of the book is written would indicate that it was intended for students preparing for their graduation, and yet, as has been stated, the work is quite unsuited, in this country at least, for this class of readers. There are quite a number of illustrations through the text, of very unequal merit. Some of them are good, others so bad that it is impossible to understand them without a careful reading of the accompanying text.

It would be impossible to give even a slight summary of the many different "works" in the three volumes. There are thirty-four in Vol. I., four in Vol. II., and five in Vol. III. The subjects treated in the last two volumes are "Obesity and the Puerperal State," "The Mechanism of the Escape of the Shoulders," "Intra-uterine Tampons," "A Contri-

bution to the Study of the Fœtal Appendages, of the Placenta, of Lacerations in the Vulva after Delivery, and of the Height of the Uterus during the Puerperium," "Extraction of the Fœtal Head," "Of Presentations in General, and in Particular of Those of the Forehead and of the Abdomen," "Lateral Obliquity of the Pregnant Uterus," "Sudden Death in the Puerperal State," and the "Diagnosis of the Stage of Labor."

B. C. H.

THE SKIN DISEASES OF INFANCY AND EARLY LIFE. By C. M. CAMPBELL, M.D., C.M. Edin., etc. London: Baillière, Tindall & Cox, 1889.

THIS small volume, as the author states, has been written for the purpose of presenting in a lucid and concise manner the various cutaneous diseases common to the earlier years of life. It cannot be said, however, that the selection of the various subheadings under which the matter is presented, has been one entirely devoid of *obscurity*, as, for instance, Chapter IV.: "Chronic non-febrile bacterial diseases," and Chapter VI.: "Diseases initiated by lesions of the epidermis and its involutions." It is a misfortune with books of this kind that the aim at conciseness often compromises their value. Brevity is desirable; but when discussing certain subjects and certain diseases—notably skin diseases—it is often at the sacrifice of clearness, and this, we think, is the weakness of the book before us; for while containing suggestive matter that will prove of value to the general reader, it unfortunately contains also much that will fail of giving a clear and intelligible understanding of the subjects presented.

HAND-BOOK OF HISTORICAL AND GEOGRAPHICAL PATHOLOGY, WITH SPECIAL REFERENCE TO THE DISTRIBUTION OF CONSUMPTION IN THE UNITED STATES. Compiled and arranged by GEORGE A. EVANS, M.D., Member of the Medical Society of the County of Kings, N. Y. 12mo. pp. 295. New York: D. Appleton & Co., 1888.

THE author states in his preface that "this treatise is made up, to a great extent, of the observations of others, and for the most part in their own words." In fact, the extent to which it is not made up of such observations is infinitesimal. Waldenburg's treatise on tuberculosis, Hirsch's *Handbook of Historical and Geographical Pathology*, and the *Tenth United States Census Reports* furnish nearly all the material.

Statistics of mortality and meteorological reports have little interest to the physician except as leading to certain practical therapeutical conclusions, and these are not forthcoming in this volume.

In conclusion, the author expresses the belief that the respiration of antiseptic air is the proper treatment for phthisical subjects, and indulges the hope that medical science may yet be able to fulfil this indication.

One may be permitted to doubt, as did Dickens's charity boy with reference to the alphabet, whether it is worth while to have gone through so much to learn so little.

F. P. H.

PROGRESS OF MEDICAL SCIENCE.

THERAPEUTICS.

UNDER THE CHARGE OF

FRANCIS H. WILLIAMS, M.D.,

ASSISTANT PROFESSOR OF THERAPEUTICS IN HARVARD UNIVERSITY.

PYRODIN.

It is interesting to look back upon the recent history of various antipyretics. When salicylic acid was first used its application was very general, but gradually it was employed in a narrower and narrower field.

Next the dihydroxyl derivatives of benzol were studied, and there appeared pyrocatechin, resorcin, and hydrochinone; they were soon shown to be unsuitable as antipyretics; then the bases of the quinine group were investigated, and chinolin (1881) was made by heating quinine with alkalis. From chinolin two phenols were prepared, one of which served as the basis of kairin (1882), the other of thallin (1884). Finally the last member of this group was prepared synthetically by Knorr, oxydimethylchinicin, or antipyrin (1884).

There is at present a third group of three which are derived from anilin—acetanilid or antifebrin (1886), and similar to it, phenacetin or acetphenetidin (1887), and most recently pyrodin, a mixture of which the active portion is acetylphenylhydracin.

Dreschfeld found that pyrodin caused albuminuria and jaundice in animals, and methæmaglobin was found in the blood. Lepine also found methæmaglobin, and after large doses the number of red blood-corpuscles was diminished. He also considered that pyrodin lessened the formation of glycogen. Dr. Zerner and Dr. Sternberg found that rabbits, after doses of about three grains, died in two days with dyspnœa.

In the Vienna Hospital Dr. T. J. Zerner has observed the effects of this drug in fifty-three cases, mostly of acute disease. Two preparations were used, the daily amount of pyrodin pills was from three to twenty grains; of the pure substance from one and one-half grains to seven grains; these doses could not be continued more than two, or at the most three days, without bringing on toxic symptoms. Both preparations proved to be powerful antipyretics; the fall of temperature was ushered in by profuse sweating;

collapse did not accompany the depression of the temperature in any case. After half an hour the temperature began to go down, reached its minimum in from two to three hours, after which it usually rose quickly, and in two or three hours had reached the point from which it started.

In the pill form of pyrodin, a dose of eight to fifteen grains corresponded to one of three to six grains of the pure substance. The remissions from pyrodin came more slowly, were not as marked, and continued longer, and the rise was less abrupt.

At times, on the other hand, the pyrodin did not have any influence upon the temperature, or only a slight and transitory one, and marked toxic symptoms were induced. In continued fevers the action was less marked than where it was remitting in its character, especially in the hectic fever of phthisis; also when administered so as to correspond with the daily remission in temperature, the action was marked; the temperature was sub-normal, a total reduction of four degrees was not seldom observed. The apyrexia continued for some time, and did not reach the point from which it started for eight or ten hours. It was not found practicable wholly to abort the exacerbations of the fevers, at least with such doses as were unaccompanied with toxic symptoms.

It is better in every case to administer a single dose, as it is more effective than several smaller doses. The sweating, which was always profuse, began ten to twenty-five minutes after the administration of the pyrodin, usually starting on the head and neck, and seldom continued so long as the sinking of the temperature. It was especially abundant in patients with phthisis and was, as a rule, well borne by the patients, except that they were disturbed by the frequent change of clothing which it necessitated.

With atropin or agaricin the diaphoresis was less. As a rule, the sweating did not occur in patients who were without fevers. The drug had little or no influence on respiration. As a rule, the pulse diminished in frequency with the fall of temperature, and usually with an increase in tension, though not always. The urine was often increased in spite of the profuse diaphoresis. Its color was reddish-yellow, and it gave the red color with chloride of iron, similar to that obtained in the urine of patients taking antipyrin. Sulphate of copper was reduced.

On the course and duration of the disease the results were unfavorable. In pneumonia, although extraordinary care was used, the course of the disease was more severe than under the expectant treatment.

In erysipelas the course of the disease was not changed, nor was the temperature controlled to a marked degree.

In a case of subperiosteal abscess of the tibia, with high fever and suffering much pain, the temperature could be reduced, but the pain did not abate. The drug was without influence on the temperature of a patient with malarial fever. In three cases of acute rheumatism the temperature was easily reduced, but the pain was not relieved to any considerable extent.

The action of the drug was most marked and certain in tuberculous patients, but here extreme care was necessary, and the smallest practicable doses could not be continued for more than three days; it was then necessary to withdraw it for at least a corresponding period.

In typhoid fever it was easy to lower the temperature, the subjective symp-

toms, with the pulse and respiration, were in some cases improved; collapse and rigors were not observed.

On the other hand, in the greater number of cases, malaise, indifference, dizziness, delirium, and a marked unfavorable action on the pulse were noted, in spite of the lessened temperature. Convalescence was not promoted.

To relieve various painful affections the pyrocin seems to be of little value.

Taking the experience of this careful study as a whole, we are led to the conclusion that pyrocin is very efficacious as a means of reducing temperature; compared with antifebrin, it has the great disadvantage of being more toxic in its effects.

In typhoid fever it should be wholly discarded; in pneumonia, scarlet fever, and measles, it is not required. In tuberculosis and other chronic diseases, accompanied with fever, it has marked limitations, as it cannot be given for more than a very few days at a time. In rheumatism it is far behind salicylate of sodium, and, as an analgesic, is not to be compared with antipyrin or antifebrin. Since pyrocin presents no advantages over other antiseptic drugs, but, on the contrary, easily exhibits toxic properties, it will doubtless soon be among the many obsolete or forgotten drugs.—*Centralblatt für die gesammte Therapie*, March, 1889.

NEW COCAINES.

The endless activity of synthetical chemistry has lately been markedly demonstrated in connection with cocaine. It has been prepared artificially from benzoyl-ecganine by introducing the methyl group into it. Recently, EINHORN has announced and described three further substitution-compounds in which the place of methyl is taken by other groups; one of these is the lower homologue of true cocaine, while the others are metameric or higher homologues. Two of these could not be obtained in a crystalline form, but only in the form of oil. The third, however, and the salts of all three, are crystallizable.

So far, it has not been stated whether any of these new "cocaines" possess any special therapeutic properties. Judging from experience with other artificial drugs, it seems probable that they may in course of time be substituted for the true vegetable alkaloid, but that, until they can be prepared absolutely free from impurities, we shall be likely to hear further of untoward results from the use of cocaine. On the other hand, the importance of this discovery can scarcely be overestimated if it can be worked with sufficient precision to provide for an increased supply of cocaine of certain composition and good quality.

It remains to be seen whether the new cocaines possess similar therapeutic properties, and whether they can be prepared artificially more economically than the natural alkaloid, or will exist only as chemical curiosities.—*Lancet*, April 6, 1889.

PELLETIERINE.

BÉRENGER-FÉRAND, who has written a book which is authoritative, *On the Tonic of Man*, has published in the *Bulletin Générale de Thérapeutique*, February 15, 1889, an article in which he sums up the cases of tapeworm—in

all one hundred and ninety-one patients—at the Maritime Hospital of Toulon during the past year (1888), and the results of treatment.

It is still to pelletierine that Béranger-Férand gives the preference, this tænicide, which is the active principle of pomegranate bark, being by far the most successful of all remedies used. During the year 1888 pelletierine was employed one hundred and fifty-two times as a tænisfuge at the Toulon Hospital. Of these cases one hundred and ten were successful, forty-two were unsuccessful, giving seventy-two per cent. of recoveries.

As for the manner of administration of the remedy: the patient takes nothing but bread and milk for supper the evening before; next morning five grains of the sulphates of pelletierine and isopelletierine are administered in solution with eight grains of tannin (or half a bottle of Tanret's solution of the mixed pelletierines, the other half to be given in an hour); from 7.30 A.M. to 8 A.M. a full dose of a table-spoonful of the German tincture of jalap is given, or from an ounce to an ounce and a half of castor oil. A few hours after the ingestion of the medicine the patient experiences a slight vertigo, and the tapeworm is voided, as a rule, four hours after the dose is taken. In order to avoid breaking of the worm during its passage and before the head is voided, it is advised that the patient shall sit at stool in a vessel nearly full of warm water.

Béranger-Férand has lately resorted to injections of a decoction of pomegranate bark to assist the expulsion of the worm, and claims that this is an improvement in the treatment.

It is needless to say that the above is now the favorite treatment of tænia in France, and Dujardin-Beaumetz affirms that "since we have established these rules of treatment, and wherever patients have scrupulously complied with them, we have had numerous successes, and in nine cases out of ten we obtain the worm with the head."

PHENACETIN AND THALLIN FOR CHILDREN.

The observations were made in PROFESSOR VON JAKSCH's clinique in Graz on thirteen children, from one to thirteen years old. The diseases were pulmonary tuberculosis, pneumonia, acute and chronic pleurisy, and typhoid fever.

Phenacetin exhibited marked antipyretic action in doses of from one and one-half to six and one-half grains.

The temperature was lowered on the average 2.5° to 5.4° F. two hours after the administration of the drug. In obstinate coughing, especially if accompanied by fever, in headache, and in pleuritic pains, it gave relief. It had no quieting effect upon restlessness. The unpleasant accompaniments were cyanosis, sweating, and sometimes slight symptoms of collapse. With thallin a small dose was employed in the beginning, and was gradually increased when it was found to cause no dangerous symptoms. The limits were from one-half to five grains.

The average depression of the temperature after two hours was 1.9° to 6.3° F., not including the doses of one half a grain.

Cyanosis, profuse perspiration, and sometimes chills, were more frequent after thallin than after phenacetin.—*Wiener klinische Wochenschrift*, Nos. 8 and 9, 1889.

AN ARROW POISON.

A letter from HENRY M. STANLEY, which was read at a recent meeting of the Royal Geographical Society, contained an interesting reference to the arrow poison employed by the natives of the Lower Congo district, and it afforded a curious insight into the strange perversions of knowledge by which the advances of civilization are retarded.

Stanley says they were much exercised as to what might be the poison on the heads of the arrows by which Lieutenant Stairs and several others were wounded, and from the effects of which four persons died almost directly. The mystery was solved by finding at Arisibba several packets of dried red ants. The bodies of these insects were dried, ground into powder, cooked in palm oil, and smeared on the points of arrows. It is well known that formic acid exists in the free state in red ants, as well as in stinging nettles, and in several species of caterpillars. This acid is, in the pure state, so corrosive that it produces blisters on the skin, and hence there is little ground for doubting that it was the "deadly irritant by which so many men had been lost with such terrible suffering."

The multitude of curious insects encountered, which rendered their lives "as miserable as they could well be," bears out Mr. Stanley's idea that many similar poisons could be prepared from insects. It certainly is strange that, with the exception of cantharides, and perhaps of *blatta orientalis*, the insect world is so little used for active therapeutics.—*Lancet*, April 13, 1889.

MEDICINE.

UNDER THE CHARGE OF

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SULPHONAL IN INSOMNIA.

MAIRET (*Bull. Méd.*, 1889, Nos. 25 and 26) reviews some of the results obtained with sulphonal, and details his own trials of the drug in cases of mental affection, and the effects with different doses of it. He sums up his remarks by saying: 1. That it is necessary to give sulphonal in large doses for only one or two days, since secondary effects from such doses are apt to appear by the third day. But the meaning of "full dose" differs, since the effect of 30-45 grains would be as great in some cases as that of 60-75 grains would be in another. This difference depends on two causes: the degree of

resistance of the subject, and the intensity of the agitating cause producing insomnia. When the degree of resistance is feeble, and the agitation slight, 45 or even 30 grains may be considered a full dose. When, on the contrary, the subject is vigorous and the agitation considerable, these amounts are small, and 60, 75, or even 90 grains must be administered. 2. Next it is necessary to diminish the dose. In all cases, no matter what the size of the initial dose was, the author lessened it to 15 grains. This amount was fixed upon because he found that the action of 30 grains, combined with that of the sulphonal already ingested, produced unpleasant secondary effects. 3. A dose of 15 grains can be taken with good hypnotic action for a varying number of days, but will finally lose its effect. 4. When the effects of sulphonal in this dose of 15 grains have ceased to appear, it is only necessary again to administer the large doses as at first, and sleep will come again.

TELLURIC ORIGIN OF TETANUS.

BOSSANO (*Rev. de Méd.*, February, 1889) reports the results of his experiments undertaken to determine under what conditions an earth contains the tetanic virus. A series of six earths, taken from dry places, and which had not for a long time been in contact with organic matter in a state of putrefaction, were used to inoculate a dozen rabbits. The results were entirely negative. On the other hand, ten specimens of earths taken from the meadows or cultivated fields, and each inoculated on two rabbits, gave positive results. Four of the twenty animals died of septicæmia; the others presented the following symptoms: On the third day there appeared contracture of the member into which the injection had been made (always the right flank). This contracture progressively increased, keeping the limb forcibly extended, involved the homologous limb, and finally became general, and was accompanied by clonic convulsions which developed under the slightest external excitation. Usually the convulsions continued to grow worse and more frequent, then ceased suddenly, and were replaced by some coma ending in death from asphyxia. On the other hand, the convulsions sometimes remained less severe and less frequent, and death occurred suddenly in a spasm more severe than the others. Autopsies revealed nothing of importance.

Examination of the pus from the inoculation wound almost always revealed the slender, straight bacillus which is characteristic of tetanus. Numerous inoculations made with portions of the liver, spleen, marrow, brain, etc., and subcutaneous injections of urine and blood, have never given anything but negative results.

Another set of experiments with inoculations through a series of animals convinced him that the earth set up an inflammation in the connective tissues, in which the tetanus bacilli found a favorable nidus, that the amount of earth made no difference in the result, and that by inoculation from rabbit to rabbit an attenuation of the virus could be attained, and the animals ceased to be affected by the poison.

The practical conclusion from these experiments is, that the bacillus is widely diffused through the soil, and that when it comes in contact with open wounds in conditions of especial receptivity it can easily engender tetanus.

Thorough disinfection should, therefore, be at once carried out in the case even of insignificant wounds which it is supposed could have been contaminated by any such earth.

THE DURATION OF THE VITALITY OF TYPHOID BACILLI AND CHOLERA BACILLI IN FECAL MASSES.

UFFELMANN (*Centralbl. f. Bakteriöl.*, No. 15, 1889) says that the question how long pathogenic microörganisms can retain their vitality in decomposing masses, especially in excrement, is of both scientific and very practical importance. This is especially so with regard to the bacilli of typhoid fever and of cholera. Clinical experience goes to prove that at least the typhoid bacilli may continue to live in the feces for months and even for years. Numerous observations have been made to this effect, and some of these the author quotes, including one of his own, in which it appeared certain that the bacilli had remained alive and virulent for over a year. The cholera bacilli, on the other hand, would appear to live but a short time; at least there are no clinical experiences to the contrary. In order now to determine the truth of the matter, the author carried out some experiments in a manner which he describes at length, adding to feces, or a mixture of feces and urine, cholera or typhoid bacilli taken from pure cultures.

The result of the experiments with typhoid bacilli showed that they possessed in fecal masses an extraordinary power of resistance. In some cases they were still living at the end of four months. It appeared to make no difference whether the fecal masses were old or not, but the question of temperature was of importance. In the experiments carried on at a temperature of more than 62.5° F. the bacilli increased in number, while in those kept at less than 50° F. there was no such increase. The chemical reaction appears also to have some influence, and the presence of large amounts of carbonate of ammonium interferes with the growth of the bacilli. Whether or not the presence of urine is of importance does not yet seem clear.

The author's experiments with the bacilli of cholera showed that these would live but four days at most, and as a rule only a much shorter time, though they certainly live in feces at least twenty-four hours. A temperature of more than 61° F. appeared to favor them more than one of less than 48° F. Whether the presence of urine expedited their destruction did not seem certain.

THE MUSCULAR ATROPHY OF ATAXICS.

DEJERINE (*Rev. de Méd.*, Nos. 2, 3, 4, 1889) publishes a long article on this subject, based on nineteen cases of tabetic atrophy, in nine of which there had been an autopsy made, with a histological examination. He draws the following conclusions:

1. The muscular atrophy which frequently develops in the course of tabes (20.1 per cent. of his cases) is not an affection arising independently and adding itself to the symptoms of this disease, but is an integral part of its symptomatology.

2. This atrophy occurs generally at an advanced period of tabes, and is oftenest symmetrical. Its evolution is slow.

3. It commences nearly always in the muscles of the extremities (foot, hand), and a little oftener in the lower than in the upper limbs.

4. This predominance of the atrophy in the muscles of the extremities, whatever may be the degree of diffusion attained by it finally, is the rule, and the contrary the great exception.

5. In the lower limbs the atrophy exhibits itself in the form of talipes equinus, with plantar flexion of the toes, especially the great toe. In the upper limbs it takes the form of the Aran-Duchenne type, very rarely the scapulo-humeral or antibrachial type.

6. The type Aran-Duchenne depends solely on muscular atrophy. The deformity of the foot and toes depends, in its commencement, on the same pathogeny; but later there are aponeurotic and muscular contractions which hold the foot and toes in their faulty position.

7. Tabetic muscular atrophy develops without fibrillar contractions. The power of voluntary muscular contraction is diminished or abolished. The faradic and galvanic contractility is modified quantitatively, but the reaction of degeneration is not common.

8. This muscular atrophy depends on an alteration of the motor nerves, which diminishes progressively from the periphery to the centre, and a trace of which may, in some cases, extend even up to the anterior roots. The alteration is purely peripheral in nature, the motor cells and the gray matter of the anterior horns being intact.

9. The radiation from periphery to the centre (so common in other forms of peripheral neuritis) agrees perfectly with the symptomatology of tabetic muscular atrophy, as the author has described it in the course of this article.

10. The pathogeny of the peripheral neuritis on which the muscular atrophy of ataxics depends is still undetermined. We know that it is not the same as the neuritis of the sensory nerves met with in these patients. Less frequent in the course of tabes than the latter, the motor neuritis ought henceforth to be regarded as pertaining also to the malady of Duchenne, the symptoms of which it can singularly modify in certain cases.

THE ACTION OF OIL OF TURPENTINE IN IDIOPATHIC CROUP.

LEWENTANER (*Centralbl. f. Klin. Med.*, No. 8, 1889) formerly reported his success with oil of turpentine in the treatment of croup, but there might possibly be a question raised about the correctness of his diagnosis, since no membrane was found expectorated. He now reports two other cases, both of them *in extremis* when the treatment was commenced, and both of which were saved, apparently by the use of turpentine.

The first case was a child of two years, who had exhibited signs of stenosis for several days, and who had reached about the seventh day of the disease. When first seen by the author the asphyxia was extreme, the cough entirely aphonic, the face pale and livid, and the pulse scarcely perceptible. No membrane had been expectorated. A teaspoonful of oil of turpentine was administered, and ice-compresses put around the throat. The child slept more quietly through the night, received another dose of turpentine on the next morning, and during the day expectorated a portion of membrane of

considerable size. Under continued administration of turpentine in smaller doses, improvement steadily progressed.

The second case was that of a child of four years, who had been attacked suddenly with symptoms of stenosis, and was in the eighth day of his illness when seen by the author. He then exhibited extreme dyspnœa, with pale skin, and filiform and scarcely perceptible pulse. There had been no membrane expectorated. A teaspoonful of oil of turpentine was given, and the continuous atomization of a mixture containing turpentine prescribed. Very soon after the ingestion of the drug there was a violent paroxysm of coughing, and a large piece of membrane three to four inches long was expectorated. As it, however, continued to form, the treatment was persisted in, a teaspoonful of the medicine being given twice a day. Membrane was coughed up in abundance, and in a few days the child was well. The author is fully convinced that turpentine has a specific action on the disease.

PLEGAPHONY.

At the close of a long article on "plegaphony, a new diagnostic method in case of the absence of bronchophony," SEHRWALD (*Münch. med. Wochenschrift*, 1889, S. 25) draws the following conclusions:

1. In many affections the testing of vocal resonance and bronchophony gives negative results, on account of the weakness of the voice. In such cases the voice can be entirely replaced, so far as concerns bronchophony, by the percussion of the larynx with pleximeter and hammer.

2. The percussion of the larynx is conducted to the chest-wall almost exclusively by the air in the bronchial tree, and only to a slight degree by the walls of the air-passages and by the soft parts of the body.

3. Over infiltrated pulmonary tissue the sound scarcely differs from its original character, and possesses three typical peculiarities—it is very loud, clear, and striking; it has a distinctly tympanitic resonance, and it feels to the ear as a short blow.

4. Over large portions of pulmonary tissue completely destitute of air, there is an extremely well-marked alteration of tone with open and with closed mouth. When the mouth is open the note is not only higher, but also much more tympanitic.

5. Over healthy lung tissue the note is duller, fainter, and especially is of a less distinct quality. It gives no palpation-impulse and has no tympany or alteration of tone. It has, however, an evident and characteristic clicking or jingling resonance.

6. Over an effusion the sound is weakened, or abolished if the percussion is light. If the lung is also without contained air, the sound is not only weakened, but clear and slightly tympanitic; while if air be still present, the weakened note has the characteristics detailed under section 5.

7. Over large cavities the sound is even louder, more striking, and more tympanitic than over infiltrated tissue, while the alteration of tone is more evident, and the palpatory sensation of a blow more pronounced.

8. In pneumo-thorax the sound has a well-marked metallic resonance.

9. The intensity of the sound is greater in the healthy lung on the side of the chest opposite to the side of the larynx which was percussed. It is also greater on deep inspiration, and when the mouth is closed.

10. Owing to the convenient situation of the part percussed, the patient can, when necessary, perform percussion himself.

ACUTE LOBAR PNEUMONIA IN CHILDREN.

C. W. TOWNSEND (*Arch. of Pediat.*, March and April, 1889) publishes a very interesting article on acute lobar pneumonia occurring in children, based on his experience in forty-two cases in patients under ten years of age, and on a comparison of this with the literature of the subject. His remarks may be summarized as follows: Acute lobar pneumonia is carefully to be distinguished from lobular or broncho-pneumonia, from which it differs widely in etiology, course, and prognosis. Though often unrecognized, it is of frequent occurrence, even in the youngest children. The cardinal symptoms found in the adult, *viz.*, pain in the side, cough with bloody expectoration, and continued high temperature may all be obscured or lacking, with the exception of high temperature, which usually ends by crisis. The onset is sudden with vomiting and occasionally a convulsion, but very rarely a rigor. Pain, if it can be localized, is frequently seated in the abdomen or is diffuse on the affected side. Cough is sometimes absent during the first two or three days, and expectoration is seldom seen in children under eight years of age. Cerebral symptoms are often marked. Dilatation of the nostril and moaning on expiration are frequently present, but also occur in other diseases. Physical signs are often very tardy in revealing themselves. The prognosis is very favorable except in the newborn, unless the child be debilitated from some other reason. Active or debilitating treatment should be avoided, as the natural tendency of the disease is to recovery.

PNEUMONIC PARALYSIS.

STEPHAN (*Rev. de Méd.*, January, 1889) reports two cases of paralysis occurring in the course of pneumonia, gives the details of many others collected from the literature of the subject, and discusses the opinions of various writers. He concludes by saying that paralyzes may develop at the beginning of pneumonia, in its course, or during convalescence. The cause of these paralyzes is in some cases a meningitis (cerebral, spinal, or cerebro-spinal), but in many others there is an entire absence of gross organic lesion. In cases of the first category it is admitted that there is an extra-pulmonary localization of pneumococci in the meninges; and in those of the second category it seems most probable to the author that the pneumonic affection has determined either directly, or indirectly by the medium of the cerebro-spinal vessels, disturbances of a dyscrasic, dynamic, or functional nature in the nervous centres or in the nerves.

PULMONARY VENTILATION AND AMPLIFICATION OF THE THORAX UNDER THE INFLUENCE OF GASEOUS INJECTIONS.

BERGEON (*Lyon Méd.*, No. 13, 1889) has again brought forward his "method" under a different theory and for a different purpose. On the ground that carbonic dioxide inserted into the rectum is rapidly absorbed and eliminated by the lungs, and thus *increases the pulmonary ventilation*, he

advises this treatment for pulmonary phthisis, reports several cases, and draws conclusions which may be summarized as follows:

1. Gaseous injections furnish a rapid means of increasing the perimeter of a thorax of insufficient size, and this increases the capacity of resistance to the catarrhal affections of the respiratory passages so frequent in those pre-disposed to pulmonary phthisis.

2. They aid in producing the disappearance of the tubercle bacilli by increasing the vital resistance and the pulmonary ventilation, and by modifying the nidus in a way antagonistic to the development of the microbes.

3. They exert a favorable action even in febrile phthisis; but in order that this action may be salutary and not harmful, it is necessary to comply strictly with the condition that the gas be obtained from a natural mineral water. If an artificial gas is to be associated with this, it is necessary that it be prepared in a condition of absolute purity.

CARDIAC FAILURE AND SUDDEN DEATH.

JOHN A. MCWILLIAM (*British Medical Journal*, Jan. 5, 1889), in writing of this subject, says that although the term is in general rather loosely used, there are still a large number of cases to which the expression "cardiac failure" correctly applies. The organic lesions most commonly associated with it are degenerative changes in the muscular walls, aortic disease, and disease of the coronary arteries, but it has been observed in cases where no gross structural lesions could be detected.

Sudden stoppage of the heart is usually assumed to "take the form of quiescent stand-still in a state of diastole," but a long series of experiments which the author has carried out on the mammalian heart has convinced him that such a mode of failure is very exceptional, if we exclude the action of such causes as chloroform narcosis, asphyxia, and hemorrhage. There are usually seen in heart failure in animals, violent, irregular, incoördinated manifestations of ventricular energy. The normal beat is at once abolished, and the ventricles exhibit a rapid, quivering, twitching action, and become distended with blood. The muscular action is arrhythmic, some of the muscular bundles being contracted while others are relaxed; and, consequently, blood can scarcely be expelled from the ventricles, which are in a state of diastole. In the course of his experiments, the author was repeatedly impressed with the ease with which this condition, one of whose titles is "delirium cordis," is produced. Indeed, it will frequently develop of its own accord, after the animal's thorax has been opened. The conditions and circumstances associated with this heightened ventricular susceptibility are always abnormal ones, involving a disturbance of the normal nutrition of the heart. They are such as would be present in the course of prolonged experiments, when the natural circulation has been in some degree modified.

The author believes that the fibrillar mode of contraction (delirium) is the mode of cardiac failure and the direct cause of death in many cases of sudden dissolution in man. This is especially likely, since it has been observed that the higher the mammal, which is the subject of experiment, stands in the scale, the more easily is this condition brought about, and the more persistent and fatal is it. Indeed, without this explanation, it is impossible to

account for the many cases of cardiac failure occurring in those apparently well, and in whom it is impossible that any sudden increase of weakening or degeneration of the cardiac fibre could have taken place. The author quotes from several writers, showing that they do not consider the usual explanations offered sufficient to account for many cases. It is probable that many instances of non-fatal syncope are due simply to a cardiac insufficiency dependent on a temporary change in the rhythm and force of the cardiac movements, while in fatal syncope there exists instead, or super-added to it, the condition of fibrillar contraction. There exists no doubt an altered nutrition of the cardiac muscle, which may or may not show visible sign to histological examination. There is no ground for supposing that angina pectoris is caused by fibrillar contraction, though death occurring in the paroxysm may be due to the heart's passing into delirium. In conclusion, the author admits the possibility of sudden syncope from plugging of the coronary arteries, inhibitory influences, mechanical over-distention, or from pressure of the heart, but claims that it is probable that in many of these cases the fatal issue is determined by the occurrence of fibrillar contraction in the ventricles: while in other instances fatal delirium cordis may develop without any of these exciting causes.

THE PHYSICAL EXAMINATION OF THE STOMACH AND INTESTINES.

OBRASTZOW (*Deutsch. Arch. f. Klin. Med.*, B. 43, H. 4 and 5, 417) devotes a long article to the consideration of this subject, quoting the opinions of others, and detailing his own careful observations and numerous measurements. His method of examination is as follows: The patient is placed upon his back with the knees drawn up, and the elbows placed against the sides. The epigastric region is then lightly struck in order to determine the absence of any acoustic signs. The patient is then raised into a sitting posture and given one or two glasses of milk or water. Having been again placed in the recumbent position, the abdomen is percussed by striking it with the four finger-tips of the right hand. The limits of the stomach, especially the lower boundary, are determined by noticing the point at which the splashing sound is no longer heard.

The position of the lower border of the stomach is the most important one, and the author devotes most of his attention to its consideration. He sums up the results of his observations on it as follows:

1. The lower border of the stomach, both in men and women, is usually to be found in the lower supra-umbilical third—i. e., the lower third of the xipho-umbilical line.

2. In men of the middle class the border lies somewhat higher than in women of the same class.

3. In working women, apart from the influence of the disease causing displacement, it lies somewhat higher than in women in affluent circumstances.

4. The influence of age is seen in the fact that in children under fifteen years the lower boundary of the stomach seldom reaches to the navel; while over the age of fifty it oftener reaches below the navel than above it. Between fifteen and fifty years the influence of age is inconsiderable.

5. Previous pregnancies produce a depression of the lower gastric border.

6. The influence of diseases is as follows: All those in which there is depression of the diaphragm, as pleurisy, emphysema, pneumo-thorax, displace the lower border downward. So also do enlargements of the liver and spleen. The converse is true of those processes in the abdominal or pelvic cavity which press the diaphragm upward—*e. g.*, pregnancy, distended bladder, tumors below the stomach, peritonitis, perimetritis, perityphlitis, intestinal obstruction, typhoid fever, etc. Diseases of the stomach, with the exception of gastrectasia, and diseases of the intestine not causing tympanites have no special influence on the position of the stomach.

7. The most marked influence on the position of the lower gastric boundary is exerted by the shape of the body and the general nutrition. Thus in men with excellent skeletal development and nutrition it lies in the middle supra-umbilical third; in men with average development it reaches the junction of the middle and lower thirds, or extends into the upper part of the lower third; and in those slightly built and with poor general nutrition it usually reaches into the lower part of the lower supra-umbilical third and to the level of the navel. The same conditions hold good for women, except that in those not of the working class and of average development the lower gastric border reaches, not into the upper part of the lower third, but into its lower part; and when the women are poorly developed, it lies usually at the navel.

THE PATHOLOGY AND MEDICINAL THERAPY OF ILEUS.

NOTHNAGEL (*Wien. med. Presse*, 1889, 443) condemns the administration in ileus of purgatives, given with the idea of increasing peristalsis and overcoming the obstruction. He has made a large number of experiments on rabbits, opening the abdomen under water, and ligating the intestine. He has found that the conditions there obtaining are different, according to whether the portion of the bowel which has been tied is in motion or at rest. If the latter, nothing out of the way is observed. Any gastric contents which may chance to be present are propelled onward, but except for this the bowel, both below and above the constriction, remains quiet. If, on the other hand, the intestine was in motion when tied there developed a very active peristalsis on each side of the ligature. The effect above the stenosis is to produce an excessive dilatation of the bowel. At times there will be a spasmodic contraction of the intestine, and the contents are forced backward toward the pylorus, to return again after the spasm has ceased, and to be again forced backward when the spasm is repeated.

Active peristalsis produces a dilatation and paralysis of the intestine, and the lesson, therefore, is not to increase peristalsis in ileus any more than in strangulated hernia or volvulus. Purgatives are to be strictly avoided. Only when the symptoms are brought about by simple fecal impaction may drugs be used to soften the mass; and the diagnosis of this condition cannot be made with certainty at the beginning. On the other hand, peristalsis may with advantage be increased from below. To accomplish this the author especially recommends the injection of iced carbonic acid water, which has the three advantages of a large amount of fluid, coldness, and distention by gas. Caution must, however, be used where the obstruction has already lasted some time, lest perforation be produced by the gas. In some cases no

means succeeds so well as the injection of a ten per cent. salt solution. An exceedingly important drug in the treatment of ileus is opium. Indeed, the author claims that opium can be used in every case of acute and sudden pain in the abdomen, when no certain diagnosis can be made. If vomiting be present, morphia should be given subcutaneously. Another important factor in the treatment of ileus is total abstinence from nourishment. He has had no success with the method of washing out the stomach, massage, or electricity.

WEIL'S DISEASE.

W. BRODOWSKI and T. DUNIN (*Deutsch. Archiv für klin. Med.*, Bd. 43, H. 4 u. 5) say that, although there have already been a number of cases of this affection described, its cause and nature are not well understood. The present case, therefore, deserves especial attention, since it is accompanied by the report of the autopsy. The patient, a strongly built and well nourished man of thirty-six years, had been attacked about ten days before with severe headache, and had since suffered from repeated chills, with great pain in the abdomen, constipation, and some sweating. When examined, he exhibited some jaundice and swelling of the feet, a few râles in the lungs, especially on the left side, and a temperature of 100.4° F. and pulse of 96. The liver and spleen were decidedly enlarged, the lymphatic glands of the neck, axilla, elbow, and groin were enlarged and tender, and the sternum and long bones also somewhat painful on pressure. The urine contained bile and a small amount of albumin, with numerous hyaline tube-casts. The blood contained a somewhat increased number of leucocytes, but was in other respects normal. After being under observation five days the patient died in collapse, having in the meantime suffered from increasing and very intense pain in the region of the liver, more marked œdema and jaundice, and a greater number of râles in the lungs.

The diagnosis had to be made from enteric fever, acute yellow atrophy, continued malarial fever, and leucæmia. The first was excluded by the absence of roseola and intestinal symptoms, and the presence of enlarged liver and lymphatic glands, and of tenderness over the liver. The second was excluded by the slight degree of icterus and the enlargement of the liver; and the third by the symptoms connected with the liver, kidneys, and lymphatic glands. At first the disease was thought possibly to be a case of subacute leucæmia, but this also was excluded by the state of the blood, and the presence of jaundice and albuminuria. The authors accordingly were of the belief that they had to do with a case of Weil's disease; and described it accordingly as *hepatitis parenchymatosa acuta, nephritis acuta, tumor lienalis acutus, adenitis generalis acuta*.

The principal results of the post-mortem examination were as follows: The lungs were very hyperæmic and œdematous; and in the lower portions there were many thickened portions which felt like spleen, could be easily crushed, and, on section, were of a deep red color. The liver was enlarged and paler than normal. On its surface and section there were numerous irregular spots, the color of yellow clay, which followed the branches of the portal vein. The liver acini were well marked. The spleen was enlarged at least five-fold, dark

red, and of almost fluid consistence. The kidneys were twice their natural size, the surface smooth, gray-red, and covered with small white spots. The cortex was twice the natural thickness, and similar white spots were visible. The medullary portion was redder than the cortical, and white spots were visible at the bases of the pyramids. The thoracic and abdominal glands were enlarged, soft, and reddish-gray. The microscopical changes are described in full; the principal ones being as follows: In the thickened portions of the lungs there was an extravasation of blood in the vesicles, and foci of small-celled infiltration in the interstitial connective tissue, especially along the course of the larger veins. The yellow spots in the liver consisted of a similar cellular infiltration, which was much more abundant in the interacinous portion of the connective tissue than in the intra-acinuous tissue. The liver cells were in some parts atrophic and compressed, in others swollen. They were cloudy, and many of them were tinged with bile. In the kidneys the condition was quite similar; the spots alluded to consisting of cellular infiltration of the interstitial connective tissue, especially in the cortical portion. The epithelial cells were swollen and cloudy. In the spleen there were small hemorrhagic extravasations, and the small-celled infiltration was seen between bundles of connective tissue. The result of a bacteriological examination was practically negative.

SURGERY.

UNDER THE CHARGE OF

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A PLASTIC OPERATION FOR RESTORING THE FREE BORDER OF THE LOWER LIP AFTER THE REMOVAL OF EPITHELIOMATA.

M. IMBERT reports (*La Revue de Chirurgie*, April 10, 1889) in detail the method of Professor Tripier for refashioning a lower lip by means of a mucous strip taken from the membrane of the lip, left attached by its two extremities and slipped into place so as to restore the normal appearance and thickness of the lip. The operative procedure is described as very simple. Antisepsis is aimed at, or, at least, scrupulous cleanliness of the mouth, gums, teeth, and all surrounding parts. The tumor having been removed, the lip is everted, the mucous strip freed by means of a bistoury or tenotome, and slid forward into place, hemorrhage having first been arrested by torsion and any projecting labial glands removed by scissors. The strip is fixed in its new place by points of suture. A tampon of iodoform gauze is placed in the groove between the lip and gums.

Since 1883 this procedure has been adopted in 46 cases. The first two were unsuccessful on account of partial mortification of the strips; two others failed on account of a return of the disease. The other 42 were successful.

PRECANCEROUS CONDITIONS OF THE TONGUE.

MR. BUTLIN, in his paper on this subject (*British Medical Journal*, April 6, 1889), deals chiefly with three points: 1. The proportion of cases of cancer of the tongue in which the disease was preceded by a well-recognized cancerous condition. 2. The relative importance of various precancerous conditions. 3. The question of the early and free removal of some precancerous conditions. In a certain number of cases which had been under the care of the author, cancer of the tongue had been preceded by a precancerous condition in at least 70 per cent. Warty growths appeared to be the most dangerous of the conditions which actually and immediately preceded cancer, and these warty growths were shown to be more frequent than was generally believed. The question was raised whether it would not be right in cases of leucoma and chronic superficial glossitis, in which warts and warty growths form on the surface of the tongue, to remove the whole of the diseased area of the tongue, or certainly the forepart of the organ, instead of merely removing the warty growth and an area of the surrounding tissue. Two cases were related in which simple warty growths formed on leucomatous tongues and were removed, and in which, at a later period, cancer developed, but not in the seat of the removal of the warts. The use of liquor arsenicalis internally was recommended in all cases of chronic affection of the surface of the tongue in which the disease is associated with various forms of chronic affection of the general integument (non-specific). Several cases were related to show the advantage of the removal of early cancerous affections of the tongue.

CLOSURE OF THE JAWS SUCCESSFULLY TREATED BY EXCISION OF
A CONDYLE.

MR. FREDERICK PAGE reports (*British Medical Journal*, March 23, 1889) the case of a fair-complexioned, delicate-looking girl, aged nine years, who was admitted under his care with fixation of the mouth from bony ankylosis of the right temporo-maxillary articulation.

When two years old she suffered from measles, followed by profuse and long-continued discharge from the right ear. Six months after, a gradual closing of the mouth was noticed. For six years there had been little or no motion of the jaw. Two years ago an attempt was made to force the mouth open, but it was not successful.

It had been proposed, and was under the consideration of the child's parents, to cut away the incisor teeth level with the gums to facilitate the introduction of food into the mouth. Mr. Page, however, proceeded to operate as follows: The lower jaw was exposed on the right side by a single semilunar incision, rather more than an inch in length, a little below and parallel to the zygoma. The lower jaw was firmly welded to the skull. With a chisel and mallet a section of the bone was made, running obliquely downward and backward from the centre of the sigmoid notch. Then the connection with the skull was by the same means severed, and the portion of the bone thus separated. The mouth could then be opened.

Very little bleeding accompanied the operation. For a few days the right

eye could not be quite closed. The wound healed rapidly, and the child suffered very little inconvenience from the operation.

A NEW METHOD OF OPERATION UPON NASO-PHARYNGEAL TUMORS.

PROF. ANNANDALE describes (*The Edinburgh Medical Journal*, March, 1889), as follows, the steps of his procedure in those formidable cases of naso-pharyngeal tumors too large for removal by splitting or hooking forward the soft palate. 1. The exposure of the anterior nares by freely dividing the mucous membrane connecting the upper lip and upper jaw, according to the plan of Rongé. 2. The division of the bony septum of the nose along its attachment to the jaw. 3. Incising the soft parts along the middle line of the hard palate, and then sawing through the alveolar margin of the upper jaw and through the entire hard palate along the same line. The soft palate may or may not require division in its middle line. 4. The forcible separation of the two jaws, and the introduction through the gap of the finger, of the periosteal scraper, or other similar instrument, with a view of separating the secondary connections of the growth to surrounding parts. 5. The removal of the growth from its primary site of origin by forceps, sharp spoon, cold snare, or galvanic wire. After the operation the two jaws are brought together, and retained by one or more sutures. Prof. Annandale believed that his operation had for the first time demonstrated the fact, that the upper jaws, after such a section, could be separated to such an extent as to give access to the base of the skull and posterior nares. Three cases recently operated upon with success were then reported in detail.

DIAGNOSIS AND TREATMENT OF CANCER OF THE BREAST.

DR. J. COLLINS WARREN (*Boston Med. and Surg. Journal*, April 11, 1889) thinks it is generally agreed at present to remove the whole gland and a more liberal supply of integument than formerly. Sometimes vertical incisions are preferred to the customary horizontal cuts, as affording better drainage. But the most important feature of this part of the new operation is the careful dissection of the fascia from the pectoral muscle, for it is in this tissue that capillary lymphatics are concealed, which form hiding-places for the outposts of the disease. Careful attention should also be paid to the margin of the pectoral muscle; not only should the fascia which covers in the axilla be dissected off from it, but its lower border should be well freed from fat and connective tissue. The axilla is best opened by a cut through the skin along the edge of the pectoralis, until we come to the edge of the coraco-brachialis. Continuing down on this muscle a short distance with the knife, the skin and superficial fat drop away sufficiently to disclose the great vessels lying beneath a thin fascia. Opening this fascia backward along the line we have come exposes the contents of the axilla, and especially the branches of the vessels, which can now be secured as the operation progresses. A pyramidal mass of fat is now dissected out, the apex reaching sometimes to the clavicle, the base frequently extending deeply on to the subscapular group of muscles. The glands which lie near the clavicle will have to be removed separately, and can best be enucleated from the neighborhood of the vessels by the finger. If they are numerous, the pectoralis can be separated on the line selected for

the ligature of the axillary artery below the clavicle, and the glands and some of the loose tissue can then be readily removed.

COLECTOMY FOR MALIGNANT DISEASE.

MR. KENDAL FRANKS reported (*British Medical Journal*, March 2, 1889) two cases of cylindrical epithelioma of the colon in which operative measures were employed to remove the tumors. In the first case the colon and sigmoid flexure with the growth and part of the abdominal wall were excised, the upper end of the gut was brought out at the angle of the wound in the loin, and an artificial anus made. The abdominal wound was closed with sutures. The patient died on the sixth day from exhaustion. In the second case the tumor was found to be an epithelioma surrounding the transverse colon near the hepatic flexure. The tumor and intestine on each side were excised, and the divided ends sutured and returned to the abdomen. On the sixth day there was a very copious motion *per anum*, and the bowels acted regularly afterward. Four months later the patient was in good health and much increased in weight.

From a consideration of the cases collected by the author, which numbered fifty-one, it appeared that the operation had proved fatal in 40.8 per cent. In twenty of those that survived operation, the disease returned in ten, and in the remainder the period which had elapsed was too short to draw conclusions from. One case was alive four years after the operation. The author drew the following conclusions: (1) Colectomy rarely effected a cure; (2) as a palliative measure it was justifiable, and frequently demanded; (3) recurrence usually took place in the liver or mesenteric glands, and death was then much easier than when the intestine was occluded; (4) that the mortality after immediate suture of the intestine and after the formation of an artificial anus were nearly equal; (5) that immediate suture of the divided ends was preferable to the formation of an artificial anus; (6) that the death-rate had been reduced in the later cases, and a further reduction might be anticipated.

In the discussion which followed Mr. Bryant said that as between colectomy, colotomy, and inaction he would prefer colotomy. Mr. Treves remarked that Mr. Franks's collection of cases of colectomy was the death-warrant of the operation. Mr. Pitts thought that it was difficult to get the patients at a sufficiently early stage of the disease to justify the operation.

WOUNDS OF THE KIDNEYS.

Antiseptic surgery and the rich statistics of the American Rebellion and the Franco-German war justify, according to GRAWITZ (*Archiv für klinisch. Chirurg.*, Bd. 38, Heft 2), a new revision of kidney wounds.

The author first considers injuries to the kidneys not accompanied by wound of the abdominal walls. From his own experience he concludes that slight rupture or laceration of this organ from force applied in the kidney region is far more frequent than is generally supposed; the usually favorable course of these cases not presenting points of sufficient interest to suggest that they be reported.

Whatever the force, or however it be applied, the pathological condition

induced by it is usually a tearing or splitting of the kidney in a line or lines radiating from the hilum, and dividing the kidney more or less completely into an upper and a lower portion. Of course, this implies a considerable bruising of the parenchyma with infiltration of blood or urine. Diffuse hemorrhage into the parenchyma, even without true bruising, is observable in every traumatic lesion of the kidney.

The bleeding is only alarming when either the renal artery or its second or third bifurcations are torn. The large size of these vessels and the high blood-pressure, give little hope of spontaneous thrombosis, though cases are recorded in which this has occurred.

If the pelvis is ruptured, the urine readily infiltrates the contused cellular tissue. If the fatty capsule of the kidney is not ruptured, it becomes distended by the blood and serves to stop the hemorrhage by mechanical pressure. If the capsule is ruptured, the blood extravasates into the retro-peritoneal cellular tissue and forms a hæmatoma extending from the diaphragm to the pelvis. A tear in the ureter would, of course, prevent the blood from passing into the bladder. In case the peritoneum covering the kidney is opened, the blood passes directly into the peritoneal cavity. This is always a serious complication, and one particularly prone to occur in children.

The symptoms of contused or lacerated kidney are, shock, of severity and duration proportionate to the amount of injury, great pain in the region of the kidney, exquisite tenderness on pressure, hæmaturia; and, in case of extensive bleeding, the detection of the effused blood by palpation and percussion together with the signs of internal hemorrhage.

Even in the slight cases unattended by other characteristic symptoms, the hæmaturia is constant. There may be the smallest mixture of blood with the urine, or pure blood may be passed per urethram in large quantities. The blood may temporarily disappear from the urine, owing to the plugging of the ureter by a thrombus. This will be denoted by renal colic. The hæmaturia usually lasts for one or two weeks.

Of 108 cases of injury to the kidney without external wound, 58 recovered. Of these 58 recoveries, there was probably primary union of the laceration in 46, since all symptoms disappeared in a few weeks. In cases of great laceration and extensive bleeding, the cure occupied many months.

In 17 of these 108 cases, there was suppuration following the injury; 10 of these suppurative cases recovered. The microorganisms of suppuration may penetrate to the contused tissue infiltrated with blood and urine, either through the blood itself, by the way of the urinary tract, or, possibly, from the intestinal contents. The abscesses thus formed may either rupture spontaneously or be opened, after which healing may take place, or they may refuse to close, ultimately exhausting the patient by long-continued suppuration.

Of the fifty cases terminating fatally, 18 were complicated by wounds of other internal organs, leaving 32 cases in which the fatal issue could be directly traced to the kidney wounds. This gives us, for contusions and lacerations of the kidney unaccompanied by external wound, a mortality of 35.5 per cent. Fourteen of the fatal cases perished from primary hemorrhage; death coming on in from fifteen to twenty hours. On section, a large amount of effused blood was found, together with the gaping lumen of a

large branch of the renal artery. Eight cases perished from either a very slow continuous hemorrhage, or secondary hemorrhage. In seven cases, the fatal issue was due to suppuration either of the kidney itself, or of the perirenal cellular tissue. In three cases, death was due to suppression of urine.

Considering, next, open wounds of the kidney, of 50 carefully recorded cases, 15 are complicated by wounds of other internal organs. Of the remaining 35 uncomplicated open wounds of the kidney, 11 terminated fatally; giving a mortality of 31.5 per cent.

The symptoms of open wounds do not differ from those previously described as characteristic of lacerations, except that urine may escape externally. Suppuration can only be prevented by most rigid antisepsis, and the time occupied in convalescence is always several weeks. Of the 11 fatal cases, 2 perished from hemorrhage, 8 from suppuration and its attending complications.

It is of interest to observe, therefore, that in open, uncomplicated kidney wounds, the danger lies almost entirely in suppuration. This is to be treated by the antiseptic method, even extirpating the kidney if it is found riddled with abscess. Evacuation of pus per the urinary tract is fraught with danger to the other kidney.

Finally, in all cases of kidney wound the use of the catheter is not to be commended, since it is a fertile source of infection, and is rarely of much service.

NEPHRORRAPHY.

M. TERRILLON reports (*Annales des Maladies des Organes Génito-urinaires*, April, 1889) the case of a woman, forty-two years of age, who, after many pregnancies, had developed, five years previously, acute pains in the left side of the abdomen. Soon after a movable tumor appeared in that region, extending to the umbilicus. It was diagnosticated as a hypertrophied kidney. It was extremely tender. At the time of operation the patient had not left her bed for six months. Lumbar nephrorraphy was performed, and thirty-eight days later the patient was much relieved and the volume of the tumor greatly diminished.

M. Terrillon thought that the mobility and tenderness of the organ indicated nephrorraphy in spite of its augmentation in volume. It might have been asked, 1st, if in spite of its mobility the congested organ could easily be brought to the level of the lumbar wound and fixed there; 2d, if the congestion or the swelling would be relieved by immobilization. This latter result seemed probable, as the mobility appeared to be certainly the cause of the congestion, though the writer had not found this interesting point treated with sufficient fulness in published cases. He employed sutures extending not merely through the fatty capsule of the kidney, but also through the capsule proper and even into the parenchyma of the organ. Six sutures of this character give greater solidity and thickness to the adhesions to the posterior abdominal wall, and this has also been shown by experiments upon animals.

M. GUYON reported two cases. He believes that while operative measures are rarely necessary in the treatment of troubles occasioned by displaced kidney, that yet they may be clearly indicated by the intolerable pains which

sometimes accompany them. In his two cases some months had elapsed and the pains had entirely disappeared.

Nephrorraphy was chosen not only on account of the value of preserving a healthy organ, but because recent statistics had shown the comparative safety of secondary nephrectomies. Removal of the kidney should be an operation of necessity; its fixation is an operation of choice; but even the latter should only be undertaken when medical treatment has failed and apparatus has proved useless.

M. Guyon employs sutures passed through the parenchyma of the organ, and has never observed any resulting change in the condition of the urine. He does not consider it necessary to freshen the kidney, but denudes the surface to which it is attached.

INGUINAL VS. LUMBAR COLOTOMY.

MR. HARRISON CRIPPS (*Medical Press and Circular*, April 10, 1889), comparing these operations, concludes that there are certain grave objections to the lumbar operation, amongst which are the depth of the bowel in a fat subject, and the very limited space in which the surgeon has to work between the crest of the ilium and the last rib, which makes it difficult to find the bowel without severe damage to the surrounding tissues. Then, again, there is often a difficulty in recognizing the colon, so that numerous mistakes have been made in opening the small intestine, and even the stomach. But perhaps the gravest objection of all is that it not infrequently occurs that the course of the colon is so abnormal as to make it quite impossible to find it by the lumbar wound, the attempted operation ending in a fiasco. On the other hand, the inguinal operation meets all these objections. There is plenty of space, the bowel can be absolutely identified, there is no tension on the stitches, and little difficulty in finding an abnormal colon. Moreover, the inguinal method has one great advantage entirely its own, by enabling the abdomen to be explored and the site of the obstruction to be verified before opening the bowel, so that the mistake of being below the lesion could not occur. This was illustrated by two cases. The objections raised to the inguinal operation are, subsequent prolapse of the bowel, and that it is not suitable for urgent cases. In the author's experience prolapse was not more frequent from the one opening than from the other, and by a little care in the inguinal operation it could to a great extent be avoided. As to urgent cases he had no hesitation in opening the bowel immediately, as was done in two instances narrated with perfectly successful results.

ON INFLAMMATORY DISEASE OF THE SEMINAL VESICLES.

MR. JORDAN LLOYD reports (*British Medical Journal*, April 20, 1889) several cases of disease of the seminal vesicles, as to which he makes the following remarks:

Seminal vesiculitis is usually secondary to mischief in the urethra. It is a common accompaniment of gonorrhœal epididymitis, and originates in a precisely similar manner. When the inflammatory process has crept from the urethra along the common ejaculatory duct to its termination, it is as likely to proceed along the short seminal tube to the vesicle, as along the twenty-

four inch vas deferens to the epididymis. It commonly extends along both these structures. Mr. Lloyd has seen the vesicles inflame secondary to urethritis, set up by the passage of a bougie, by the presence of a stricture, and after coitus with a leucorrhœal woman. He has seen both vesicles suppurate in one case where their inflammation appeared to be primary; at least there was no antecedent cause discoverable in the urethra. When acute inflammation attacks a vesicle it gives rise to a swelling at the base of the bladder, the greater part of which is due to effusions of inflammatory products into the perivesicular connective tissue rather than into the cavity of the vesicle itself, just as in epididymitis the bulk of the enlargement depends upon inflammatory infiltration into the connective tissue between the tubules of the epididymis.

Seminal vesiculitis, like acute epididymitis, most frequently terminates in resolution. It sometimes ends, however, in suppuration, and, when this occurs, pus may make its way laterally into the ischio-rectal fossa, or may diffuse itself deeply around the rectum (constituting one of the varieties of perirectal suppuration), or may discharge itself by the ejaculatory duct, or may open either into the bladder or rectum, but never into both cavities together.

The symptoms of vesicular disease are essentially those of vesical irritability—increased frequency of micturition, attended by more or less pain. They are like those of prostatitis, according to Professor Humphry, and consist in uneasiness about the perineum, painful defecation, frequent and rather painful micturition, or retention, painful emissions at night, bloody semen, persistent gleety discharge, and irritability of the bladder and sexual organs.

Zeissl says that the subjective symptoms differ but little from those of prostatitis; but there is one symptom which belongs exclusively to this disorder, namely, erections are well-nigh constant, and so painful as to constitute priapism. According to Lallemand, Gosselin, and Pitha involuntary seminal emissions occur.

Objective symptoms are much more reliable, and are easily elicited by careful methodical examination. A finger in the rectum recognizes an elongated swelling beyond the prostate, running obliquely upward and outward at the side of the base of the bladder. This swelling is made quite evident to the examining finger when a metal bougie is passed into the bladder and moved from side to side across the tumor. Mr. Lloyd has demonstrated a distended vesicle in this way, and has verified the diagnosis by aspirating seminal fluid through the rectum.

The conclusions he is led to by his present experience are as follows:

1. That inflammatory disorders of the seminal vesicles and their ducts are not uncommon.

2. That they are, in many respects, analogous to inflammatory diseases of the Fallopian tubes in women.

3. That while occurring sometimes primarily, they are, as a rule, secondary to inflammation of the urethra.

4. That the ejaculatory ducts may become obstructed, and the seminal vesicles consequently hyper-distended.

5. That termination by suppuration is exceptional.

6. That when suppuration occurs it should be dealt with by incision from the perineum rather than from the rectum.
7. That gonorrhœa is by far their most common originator.
8. That they are frequently concomitant with gonorrhœal epididymitis.
9. That they are usually diagnosed as inflammation of the prostate or neck of the bladder.
10. That while certain subjective phenomena are suggestive of these disorders, their diagnosis can only be made by objective examination from the rectum and bladder.

LINEAR ELECTROLYSIS IN URETHRAL STRICTURE.

M. LAVAUX reports (*Annales des Maladies des Organes Génito-Urinaires*, April, 1889), at a recent séance of the Academy of Medicine, that the results observed and collected by him in the cases of urethral stricture treated by electrolysis showed that, after the lapse of time, the cures were no more permanent than after divulsion or internal urethrotomy. Among a number of patients operated on seven or eight years ago by Mallez and Jardin the stricture had returned in every case. He concludes that no permanent cure has been discovered, and that rapid dilatation with careful attention to asepsis of the bladder and canal is the preferable method of treatment.

ULCERATION OF THE INNOMINATE ARTERY FROM PRESSURE BY A TRACHEAL TUBE.

MR. ERNEST MAYLARD reports (*Annals of Surgery*, March, 1889) the case of a child, eight years of age, in whom tracheotomy was performed for impending asphyxia caused by the pressure of a cervico-dorsal spinal abscess. The ordinary tracheal opening failed to give relief, and resuscitation was only effected by passing an instrument into the trachea, and hooking it well forward toward the sternum. When this was done air entered the lungs freely, and all symptoms of suffocation immediately disappeared. Removal of the instrument or any relaxation of the forward pull on the trachea at once caused the reappearance of all the obstructive symptoms. The insertion of an ordinary tracheal tube proved useless as the obstruction was below the part to which the tube reached. An ordinary gum catheter passed for about two and a quarter inches down the trachea proved temporarily efficient, and three days later was replaced by a specially made vulcanite tube, the length of the vertical part of which was two and one-quarter inches, and the bore equal to that of a No. 13 catheter. The child did well for four or five months, although it was impossible permanently to remove the tube. At the end of that time it died suddenly from a tremendous hemorrhage, which was found to be due to an opening into the innominate artery. At the autopsy an abscess was found surrounded by a thick dense membrane, and embracing the lower two cervical and upper two dorsal vertebræ. The patient during life had had paralytic symptoms, probably due to the pressure of this collection of pus.

With regard to the hemorrhage which finally caused death, it would appear by no means a very rare event in cases of tracheotomy. In a case published by the late Mr. Royes Bell, death occurred from sudden severe hemorrhage

fifteen days after the operation. No post-mortem was made, but he expresses his opinion that ulceration had taken place into the innominate artery. He also refers to a similar case of Mr. John Wood's, where a silver tube had ulcerated its way through the trachea into the innominate artery. The specimen is in King's College Museum, London. Mr. Parker, in his work on tracheotomy, also mentions a case where the tube had ulcerated through into the innominate vein. Mr. Howse mentions having seen two cases in children at Guy's Hospital where death occurred from a similar cause. Mr. Marsh refers to four fatal cases the result of ulceration.

ACUTE INFECTIOUS OSTEOMYELITIS.

At the Third Congress of Russian Physicians, held at St. Petersburg in January, PROF. BOKROFF, of Moscow, made a report (*Revue de Chirurgie*, April 10, 1889) which contained the following conclusions:

Osteomyelitis most frequently affects the epiphyses of the long bones during their period of growth. Experimental and clinical observations demonstrate that the process is provoked, not by a specific microorganism, but by the same staphylococcus pyogenes that occasions acute suppuration in other tissues. Clinical facts also show a definite relation between osteomyelitis and the furunculosis, lymphangitis, etc., which precedes or follows the disease of the bones. Experiment proves that for the début of the affection in the bones it is necessary: 1st. That a certain number of microbes effect their entrance in a given time; 2d. That they find already certain disturbances of the circulation; 3d. The organism carries on a continual struggle with the microbes which enter the tissues; the same microbe does not always show the same vital force—a culture of staphylococcus of thirty or forty days loses all its pathogenic property; 4th. As a predisposing cause, a preëxisting purulent collection occupies the first place; abscess, furuncles, etc., from which a certain quantity of staphylococcus pyogenes, at the maximum of vitality, may penetrate into the system. By aërial channels infection may occur, but it is not probable that it takes place by the digestive tract. Traumatism and the consecutive vascular disturbances are also frequent predisposing causes.

Bokroff favored early and energetic operative interference, which, in his opinion, did good even when no pus was found.

THE ANTISEPTIC REMOVAL OF SO-CALLED LOOSE BODIES FROM THE JOINTS.

DR. SAMUEL B. WOODWARD (*Boston Medical and Surgical Journal*, April 25, 1889) has been able to collect (principally from English and American sources) 105 cases where claim of direct antiseptic incision of a joint for removal of a foreign body is made. In 104 of them the knee was the joint affected. The list includes, in addition to 92 operations for the simple removal of over 740 loose cartilages (400 in one instance being present), one operation where, besides the removal of a cartilaginous body, a vascular tumor two inches in diameter was cut away with scissors, and another where a bony tumor was removed with a saw. In one case the foreign body proved a sarcoma; in one a fibroma; in one a lipoma; and in another a fibro-fatty tumor.

In two cases loose pieces of bone were removed; in one a thorn, supposed before the operation to be a spicula of bone, and twice bullets were extracted. One of these had been thirteen years in the joint. In two cases "nothing could be found;" but, in one of these, adhesions on the back of the patella were forcibly broken up. There was but one death from the 105 operations, and, as that was due to "phlegmonous erysipelas," the asepsis of the operation is at least doubtful. In two cases suppuration demanded amputation of the thigh, after which the patient recovered.

One of these cases was after removal of a "fibro-fatty body" by Dr. R. F. Neil, where there was "severe manipulation" of the joint; the other was at St. Thomas's Hospital, and no particulars are given.

Stiffness of the affected joint is reported in three cases. In one of these cases 400 loose cartilages were removed, and in the other two, 25 and 4 respectively. In four other cases slight impairment of motion is reported. In one of these there were adhesions and stiffness before operation, but no loose body.

The second was one where a bony tumor was also sawed off. In the third, recovery was complicated by a secondary hemorrhage, rheumatic fever, and pericarditis. Of the fourth, we have no particulars. In all other cases prompt recovery, with good motion of the affected joint, resulted. In place of Larry's death-rate of 21.3 per cent. and Barwell's of 8.3 per cent., we have here a death-rate of less than 1 per cent. (0.9 per cent.), with great doubt whether the single death should be recognized as the result of an antiseptic operation; while in but ten cases (9.5 per cent.) was there failure to produce a perfect joint with good motion. With proper care before, during, and after this operation, there seems to be then but a remote chance of loss of limb, and almost no risk to life, and although in complicated cases there is possibility of more or less resulting stiffness, it is to be remembered that a joint containing loose cartilage is a constant source of annoyance, and that the possessor is always more or less crippled by it.

OTOLOGY.

UNDER THE CHARGE OF

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CYSTS IN THE AURICLE.

HARTMANN, of Berlin, holds that many cases of asserted hematoma auris are not due to an effusion of blood, but to the formation of simple cysts in the auricle (*Archives of Otol.*, 1888; *Annales des Maladies de l'Oreille*, March, 1889). He reports three new cases. The subjects were in good health, of middle age, without any tendency to psychic derangement, excepting in one case. Heretofore the subjects have been men; in this last series one case was that of a woman. There was no traumatic origin in any instance. These tumefactions, which were incised about two weeks after their formation, discharged

a perfectly clear liquid, sometimes yellowish, but never bloody. In all cases the cartilage was denuded. Healing occurred rapidly where a rigorous antiseptic dressing was maintained. Hartmann's method consists in dressing the wound with iodoform gauze. He endeavored to discover microorganisms in the contents of these cysts, but the examinations as well as the cultures on gelatine were negative.

ACUTE MYRINGITIS IN CHILDREN.

EITELBERG has reported a case of acute myringitis in a child four years old (*Archiv für Kinderheilkunde*, Bd. x.; *Annales des Maladies de l'Oreille*, March, 1889). This disease, a rare one in little children, appeared in a little girl, who suddenly became dull, feverish, and lost her appetite. The right membrana tympani was found uniformly, intensely red and swollen, though the malleus could be distinguished. Politzer's inflation giving only temporary relief, the membrana was incised on the supposition that pus was in the drum-cavity. No pus, however, was found; in a few hours the pain in the ear ceased, and in four days the membrana was nearly normal in appearance.

PERSISTENCE OF HEARING AFTER DESTRUCTION OF THE STAPES.

The extirpation of the stirrup in this instance was unintentional (BERTHOLD, of Königsberg, *Arch. of Otol.*, No. 3, 1888; *Annales des Maladies de l'Oreille*, March, 1889). It occurred in a case of otorrhœa followed by a perforation in the membrana and an extensive adhesion of the tympanic membrane. In order to diminish the subjective noises in the head, and the vertigo, the author endeavored to detach the adhesions, and in doing so was surprised to find that the stirrup came out entire on his hook. There was no flow of the labyrinth-fluid, but violent vertigo ensued for two or three days. Berthold concluded that the inflammation had led to dislocation of the stirrup. He insists that some hearing was maintained, because, notwithstanding the perforation in the membrana, loud words were heard near the ear, and when the perforation was closed mechanically the patient heard whispers fifteen feet.

MOBILIZATION OF THE STAPES: OPERATIVE MEANS OF PRODUCING IT.

M. BOUCHERON has given the following outline for the indications and of methods for this operation (*Annales des Maladies de l'Oreille*, January, 1889). The indications are: 1. When the stapes begins to be ankylosed, and ordinary means for its relief impotent. 2. When labyrinthine pressure from without is persistent and compromises the vitality of the acoustic nerve.

Boucheron has performed the operation sixty times without any bad after-results, which he ascribes to strict antiseptics.

The most favorable time for the operation is the beginning of the ankylosis of the stapes, when the hearing for moderately loud speech is yet maintained at the distance of one metre, and when the harmonics of speech (stage whispers) are heard at 20 inches and 30 inches. Then mobilization of the stapes will give an audition for words, at three, four, and even five metres. (Normal hearing for similar sounds is fifteen to twenty metres.) This operation is useless when osseous ankylosis of the stapes has ensued, or when the terminations

of the acoustic nerve are injured or changed by the excessive pressure upon the labyrinth-fluid.

Operative procedure. 1. Antisepsis and cocainization of the external auditory canal. 2. Myringectomy of the posterior half of the tympanic membrane. 3. Dislocation of the incus from the stapes by means of a hook. (In the simpler cases this dislocation is not done.) 4. Mobilization of the stapes in a direction to relieve its inward pressure, either by means of light traction with a small hook, or by drawing it up or down and backward and forward in the direction of the line of action of the stapedius muscle. 5. Then, tenotomy of the tensor tympani. 6. Removal of the malleus from the incus.

Since some of the diseases productive of the retraction of the stapes and the consequent otitis are diseases which relapse, it may happen that the labyrinth compression will return. Therefore, treatment of gout, rheumatism, syphilis, and catarrh, either infectious or from cold, if present, should follow the operation. The operation of mobilization may have to be repeated.

CHANGES IN THE INTERNAL EAR, IN HEREDITARY SYPHILIS.

BARATOUX reports his conclusions based on forty-three autopsies of subjects affected with hereditary syphilis (*Annales des Maladies de l'Oreille*, January, 1889). Nineteen of these cases were stillborn and twenty-four ranged from a few hours to four years old. Among the stillborn eight were affected in the middle ear, three in the labyrinth, eight in the middle and internal ears. In the twenty-four other cases, nineteen were affected in the tympanum, one in the internal ear, and four in both middle and internal ears. This gives twenty-seven cases of tympanic affection, four of labyrinth disease, and twelve of both middle and internal ear disease combined.

Lesions in the tympanic cavity near the labyrinth were attended by injection of the soft parts in the labyrinth. There was thickening of the membranes on a level with the cochlea, and the ampullæ of the semicircular canals, which were reddened. A sero-sanguinolent fluid bathed these parts.

PSYCHICAL DISTURBANCES INDUCED AND MAINTAINED BY AURAL DISEASES.

The attention of alienists is called to the two following considerations by DR. COZZOLINO (*Annales des Maladies de l'Oreille*, February, 1889): 1. Lesions of the ear are frequent among the insane, and very often they sustain an important part in the production of hallucinations or psychic troubles. 2. In a patient affected with auditory hallucinations the ears should always be examined, as an accurate examination will lead to a more rational therapeutics, capable of curing the case if applied in time.

AURAL AFFECTIONS IN "RAILWAY SPINE."

The nervous lesions observed in the so-called "railway spine" should be attributed, according to some observers, to an organic and not to a functional lesion. Aural lesions consequent upon railway injuries have received but little attention. There have been noted uni- or bilateral deafness, and tinnitus aurium as due to these injuries. BAGINSKY reports five cases of aural

injury from railway accidents coming under his notice (*Annales des Maladies de l'Oreille*, March, 1889). He concludes that these auditory disturbances should be referred to a lesion of the auditory nervous system consequent to the railway injury. In many cases the auditory lesions do not appear immediately, which seems due to the progressive nature of the process of degeneration which goes on in the ear.

MÉNIÈRE'S VERTIGO.

BRUNNER, of Zurich, formulates the following conclusions regarding this disease (*Annales des Maladies de l'Oreille*, March, 1889):

1. The name Ménière's disease is no longer applicable to any special and distinct affection, but rather to a complex set of symptoms; hence the name should be changed to Ménière's vertigo.

2. Under this head there should be placed only those cases in which the attacks come on suddenly, without known cause, at distinct and prolonged intervals, without fever, preceded by a more or less intense subjective noise in the ear, and followed by a more or less rapid deafness. This definition excludes vertigo dependent upon mechanical causes in the middle ear, as well as permanent vertigo due to acute labyrinth diseases.

3. Without doubt cerebral lesions, and especially cerebellar lesions, can produce Ménière's vertigo without any positive diagnostic sign. This difficulty does not often occur, because it is rare that such lesions produce deafness, excepting in cases of pressure on the fibres of the acoustic nerve.

4. Ménière's vertigo has generally as a fundamental cause some pathological change, either primary or secondary, in the labyrinth.

5. Nosologically we must distinguish between the grave cases and the light ones, as those consecutive to otorrhœa.

6. Some of the grave ones may be connected with hemorrhages in the labyrinth; some of the light ones with a vaso-motor neurosis.

7. Generally, Brunner thinks, too important a rôle is ascribed to hemorrhage, although many cases are doubtless due to a pathological modification of the blood-pressure in the labyrinth: *an obstacle in the efferent canals of the perilymph and endolymph is an important factor in the pathogeny of this disease.*

8. In favor of the vaso-motor origin of Ménière's vertigo there may be adduced the following reasons: (a) The vertiginous aura preceding the attack. (b) Slight functional troubles show themselves only slowly. (c) A certain regularity in the frequency of the attacks. (d) The effect of quinine or even galvanization of the cervical sympathetic in moderating or arresting the attacks.

9. According to the experience of oculists, large doses of quinine provoke ischemia of the retina, and, as we all know, the labyrinth is also thus congested. We can thus explain the favorable action of this drug in cases of Ménière's vertigo.

DISEASES OF THE LARYNX AND CONTIGUOUS STRUCTURES.

UNDER THE CHARGE OF
J. SOLIS-COHEN, M.D.,
OF PHILADELPHIA.

MEMBRANOUS RHINITIS.

DR. F. H. POTTER, of Buffalo (*Journ. of Larynx. and Rhin.*, March, 1889), describes a group of cases of membranous rhinitis, which, according to his observation, occurs in about two per cent. of all cases of acute rhinitis. They were not associated in any instance with any of the infectious diseases. The attack begins as in intensified acute rhinitis with a most disagreeable persistent sensation of tickling, but the systemic disturbances are not severe. By the third day, the discharges form a white, adherent coating over the inflamed turbinated bodies and the septum, which continues for about three weeks despite the most energetic treatment, constitutional and topical.

SARCOMA OF THE NARES.

DR. GEORGE W. MAJOR, of Montreal, has reported (*Journ. of Larynx. and Rhin.*, April, 1889) a case of spindle-celled sarcoma the size of a small pigeon's egg, which had developed very rapidly from the triangular cartilage. It was removed with a cold wire, and its seat of origin was destroyed with the electric cautery. No recurrence had taken place at the end of four months.

SYPHILITIC FIBROID DEGENERATION OF THE NASAL PASSAGES AND PHARYNX.

Under this caption DR. JOHN NOLAND MACKENZIE, of Baltimore, calls attention (*Journ. of Larynx. and Rhin.*, April, 1889) to an interstitial fibroid syphilitic degeneration in the nasal passages and the pharynx, mainly met with in long-neglected cases, chiefly in men and especially in those addicted to the constant use of large quantities of alcoholic beverages. The turbinated bodies are the structures which chiefly suffer. They are much enlarged, and present the appearance of dense, hard, whitish, yellow, or red sessile masses; or they become converted into distinctly pedunculated growths which are true fibroid polypi. Mackenzie believes that a large proportion of the so-called fibroid tumors of the nasal fossa in syphilitic subjects are none other than the prolongations of the degenerate turbinate bodies. They sometimes undergo ulceration and may become partially destroyed, or may become bound, by dense bands of cicatricial tissues, to opposing structures. Under the microscope they present more or less complete conversion of the turbinate bodies into dense fibrous tissue.

The pharynx is less frequently affected. The tonsils and palatine folds are sometimes converted into dense masses with loss of all trace of their original

anatomical appearance. These masses should not be confounded with gummatous infiltration.

The most important points of differentiation are the negative effects of constitutional treatment; the tendency to well-defined outgrowth; the surrounding anæmia; and the hard dense sensation communicated to the finger through the probe.

FIBRONEUROMA OF THE PHARYNX.

DR. G. E. FENWICK (*Journ. of Laryn. and Rhin.*, April, 1889) reports a fibroneuroma removed by external excision from the pharynx of a young girl. It was situated behind the right tonsil and had caused great pain in swallowing. It was one of a number of painful tumors in various parts of the body of the same subject.

TUBERCULOSIS OF THE LARYNX.

DR. J. CHARAZAC, of Toulouse, strongly condemns (*Rev. de Laryn., etc.*, April 1, 15, 1889) the use of the sulphur waters in tuberculosis of the larynx; presenting the notes of a few cases in point, and criticising the accuracy of the claims that have been made for the treatment; contending that his closest research finds but one doubtful case benefited, and that a patient whose improvement is to be attributed to a subsequent sojourn in Egypt.

CYST OF THE LARYNX.

DR. FURUNDARENA-LABAT, of Tolosa, reports and depicts (*Rev. de Laryn., etc.*, April 15, 1889) a rare case of cyst of the right arytenoid cartilage. It was the size of a hazelnut, occupying the posterior half of the vestibule of the larynx and concealing a view of the cartilages of Wrisberg, the arytenoids, and the posterior two-thirds of the vocal bands. Incision with the laryngeal knife and pressure with forceps evacuated a clear fluid mixed with yellowish granulofatty concrete masses; and then the walls were torn off and the parts cauterized with chromic acid. The patient remained well up to date, the operation having been performed February, 1882.

SARCOMA OF THE LARYNX IN A CASE OF MULTIPLE SARCOMA.

HJÖRT reports (*Norsk. Mag. f. Lægevid.*, December, 1888; *Centbl. f. Chir.*, March 16, 1889) an interesting case in a healthy man, sixty-two years of age. Steadily increasing throat trouble had existed for three months. There was difficulty in swallowing solid food, and liquids were sometimes regurgitated through the nose. The voice was somewhat indistinct; the respiration free. Laryngoscopic inspection revealed a grayish-red warty excrescence the size of a pea between the root of the tongue and the epiglottis, somewhat to the right of the middle line. In the interior of the somewhat hyperæmic larynx there was a pedunculated, bluish-red tumor, the size of a chestnut, springing from the inner surface of the left arytenoid cartilage. Its surface was smooth but slightly excoriated. It almost filled the transverse diameter of the larynx. In addition to these growths the patient had a group of bluish tumors from the size of peas to that of beans in the left palm, on the left foot, and on the

right ring finger. These were said to have occasionally undergone spontaneous recession. In one of these growths, after extirpation, densely distributed spindle cells were found with round-celled infiltration along the vessels.

The laryngeal growth was readily removed after splitting the larynx, immediately after a precautionary tracheotomy; both procedures being performed under cocaine anæsthesia exclusively. The two halves of the ossified thyroid cartilage were united with sutures. The voice was completely restored, and the patient was freed from all his annoyances. Microscopically, the tumor was determined to be a spindle-celled sarcoma. Subsequently the tumors in the extremities were extirpated. The abstract makes no mention of extirpation of the tumor in the glosso-epiglottic sinus.

PROLONGED SOJOURN OF LARYNGEAL GROWTHS.

DR. THOMAS HARRIS recently exhibited to the Manchester Medical Society (*Brit. Med. Journ.*, March 2, 1889) a woman, forty-three years of age, who had suffered from almost complete aphonia since she was thirteen years old. Laryngoscopic inspection had been practised for the first time only a few months before, when she first came to Dr. Harris, who found the larynx nearly full of polypi, most of which he had removed with forceps and had found to be simple papillomata. The patient had been repeatedly under treatment for hoarseness and difficulty of breathing. The failure to institute laryngoscopic exploration by her previous attendants seems to the compiler the most remarkable and unfortunate feature in the case, whether the result of ignorance or of neglect.

ENCHONDROMA OF THE CRICOID CARTILAGE.

In a paper on cartilaginous tumors of the larynx (*Med. Jahrb.*, Wien, 1889, Jahrgang 1888, vii. Heft) DR. FERUCCIO PUTELLI, of Venice, describes and illustrates an instance found in the body of a goldsmith, fifty years of age, who died some twenty minutes after admission into the hospital with intense dyspnoea.

The tumor occupied both faces of the plate of the cricoid cartilage, extending so far into the lower portion of the laryngeal cavity as to narrow it to a semilunar slit three millimetres wide. The tumor was spherically ovoid, twenty-two millimetres in thickness, twenty-three millimetres in length; and was composed of cartilage tissue of normal hyaline character peripherally, but centrally of somewhat softer consistence, streaked bluish and white. It was enclosed posteriorly by a thick yellowish lamella, barely a millimetre in thickness. Anteriorly it penetrated into the submucous connective tissue by an irregular surface. The cartilage was retained for a distance of three millimetres from the upper and for four millimetres from the lower extremity.

INTUBATION OF THE LARYNX AND AIR-PASSAGES, WITH A DESCRIPTION OF A NEW INSTRUMENT AS AN AID TO CERTAIN OPERATIONS.

Under the above heading PROF. ANNANDALE, of Edinburgh, reports (*Brit. Med. Journ.*, March 2, 1889) that experience has shown him that intubation of the trachea through the mouth can, in the majority of instances, be sub-

stituted for preliminary tracheotomy or laryngotomy, as a simpler and safer aid to prevent passage of blood into the air tube, in operations involving the mouth or naso-pharynx. The procedure he describes in this connection, however, is catheterism and not intubation. He credits Dr. Macewen, of Glasgow, as the first surgeon to use intubation on the principle he details; that surgeon's first operation having been performed on July 5 and 6, 1878; and he refers to an important and practical paper on the subject by Macewen in the *Brit. Med. Journ.* for July 24 and 31, 1880. He notes a case of his own in point, in which about nine months before his report a man was suffering from great difficulty of respiration, due to pressure from a very large and malignant tumor of the thyroid gland. Annandale decided to cut down upon the displaced thyroid cartilage, penetrate the larynx, and introduce a tube. Before operating he provided himself with an efficient mouth-gag, and with a gum-elastic catheter, No. 10, with an opening at its extremity. During the operation the patient's breathing ceased; and it was only by introducing the catheter through the glottis that his respiration was restored. The anæsthetic was then given through this catheter, and the operation was completed with success. Annandale had since employed a similar plan in operations attended with a risk of a flow of blood into the air-passages. The tube used in these cases was a gum-elastic catheter armed with a stilette of strong wire to render its introduction easier; care being taken that the point of the wire should not project through the terminal opening of the catheter.

While acknowledging that there will always be cases of sudden obstruction in the larynx or trachea most quickly and consequently most successfully restored by rapid laryngotomy or tracheotomy, Annandale believes that many of these sudden emergencies can also be treated rapidly and successfully by the introduction of a tube through the mouth into the trachea, and its retention, when necessary, for some time. He relates an instance of slight displacement of the larynx and trachea by a large and apparently glandular swelling of the neck, in which rapid increase of the swelling ensued, in consequence of an attack of acute inflammation, rendering the breathing most difficult. The house surgeon, Dr. Simpson, introduced a tube into the trachea through the mouth, and this at once relieved the patient. The tube was retained for twenty-four hours, when chloroform was administered through it, and a deep incision into the tumor gave exit to a collection of pus. The pressure being thus taken off from the air-passage the tube was removed, and the case progressed satisfactorily. Dr. Simpson employed the same catheteric procedure successfully in a case of scald from boiling water in a child five years of age.

To overcome the liability of the soft catheter to become compressed by the teeth, or by a twist, Annandale has had a special tube made shaped after Schrötter's, provided with a vulcanite gag to protect it from the teeth. An illustration is given of the appliance. Annandale then discusses the value of intubation in acute inflammatory affections of the larynx, more particularly in croup and diphtheria; and comes practically to conclusions similar to those entertained by conservative surgeons in the United States.

In cases of stenosis of the larynx the result of chronic inflammatory conditions, or of accidental or surgical wounds, Annandale states that the O'Dwyer tubes have been followed by better results than by any other treatment; the

permanent retention of the tube, when it can be borne, being likely to have a beneficial effect in restoring the proper calibre of the canal. With this view the experience of the compiler is in disaccord; for he has found, in a few such instances in which he has tried intubation and seen its results at the hands of others, that the stricture becomes greater than ever on the permanent withdrawal of the tube after its retention for several weeks or months. He believes, therefore, that section of constricting edges of the stricture, with divulsion, and systematic stretchings afterward, offers better prospects of permanent dilatation, whenever any such prospect is recognizable.

STENOSIS OF THE LARYNX FROM TYPHOID FEVER.

DR. ARTHUR THOST, of Hamburg (*Berliner klin. Woch.*, Jan. 28, Feb. 4 and 11, 1889), in an article on treatment of laryngeal stenosis by dilatation, after the method of Schrötter, states that the prolonged and severe epidemics of typhoid fever in Hamburg have been characterized of late years both by great severity in individual cases and by manifold complications. Among these are various diseases of the mucous membrane of the mouth, parotid, pharynx, rhino-pharyngeal space, middle ear, larynx, and even the œsophagus. Four separate processes may be recognized:

1. Characteristic typhus infiltrations analogous to the process in the intestine (Rokitansky; Eppinger).

2. Mycotic ulcers, small crater-formed ulcers, mostly in the vocal bands, and produced by deeply penetrating microorganisms.

3. Diphtheritic ulcers (typhus, croup) more flattish, spreading over the entire mucous membrane, and leading to superficial necrosis.

4. Decubital ulcers; most frequent on the posterior portion of the larynx.

All the forms of ulceration have great tendency to penetrate in depth, and to produce necrosis of cartilage and consequent stenosis. This is particularly frequent in decubital ulcers, which proceed from the simple catarrh, and which interfere with the taking of nourishment. The careful treatment of this catarrh is, therefore, one of the most important indications. Deep ulcerous processes, whether associated with perichondritis or not, readily excite extensive œdema, which then renders tracheotomy necessary. The deeper portion of the larynx remains free or is implicated in the never-failing tracheo-bronchitis, and the diphtheritic process rarely oversteps the borders of the vocal bands, so that the tracheotomy usually controls the danger of suffocation for good. The upper portions of the larynx do not heal readily.

A number of changes which produce stenosis occur as a result of the perichondritis, necroses, abscesses, cicatricial adhesions, and chronic œdema; all of which render the permanent use of the canula necessary. Its long retention produces granulation-stenosis as a second cause of constriction. Thus, in the majority of cases of stenosis after typhoid fever, there are two forms: one, above, produced by the infectious disease, and one, deeper, produced by granulations and the changes excited by the canula. The granulations of the lower portion of the larynx are found, especially in crico-tracheotomies, at the upper anterior angle of the wound, the very point against which the canula impinges in coughing, and in the various movements of the neck.

A projection forms, too, in the shape of a spur on the posterior tracheal wall at the level of the wound. It cannot be the result of pressure, and is attributed by Stoerk to the remains of an especially intense inflammatory process at this precise place. It is of very firm consistence, and resists the action of thermo-cauterization much longer than the granulations anteriorly.

The treatment of these conditions consists in first burning the granulations and callous projections away with the electric cauter, and then dilating the parts with the solid tin bougies and long tubes used in Schrötter's method and its subsequent details. The bougies may be inserted immediately after the burnings. Several cases are reported in detail which show the successful results of persistence in treatment for a series of months.

PROLAPSE OF THE VENTRICLE OF MORGAGNI.

PRZEDBORSKI (*Gaz. Lek.*, Nos. 51 and 52, 1888; *Journ. of Laryn. and Rhin.*, April, 1889) reports two cases; one in a phthisical lady, cured by cauterization with chromic acid; and the other, a multiple hernia in a man addicted to alcohol, cured by evulsion with forceps.

DERMATOLOGY.

UNDER THE CHARGE OF

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AND

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EXPERIMENTAL RESEARCHES CONCERNING THE RINGWORM FUNGUS.

The experiments made by THIN, and reported in the *British Medical Journal*, February 23, 1889, are both interesting and of practical importance. The experiments were made with affected hairs taken from ringworm patches. The experiments and results are given in tabular form, and have special reference to the influence and destructive effect exerted upon the vitality of the fungus by different substances.

As an incidental experiment it was found that the fungus contained in hairs retained its vitality for at least eleven months after being detached from the scalp. The next table discloses the fact that the trichophyton is sterilized by being placed in water seven days; the practical bearing of this experiment being that simple washing of the affected parts has absolutely no destructive effect upon the fungus. Olive oil, lard, and vaseline, even after the fungus had remained therein for a number of days, had no effect in checking the development of the fungus after it was placed in nutrient gelatine.

Ordinary soapsuds, after a comparatively short period of contact—thirty minutes or more—destroy the vitality of the fungus. This same result was much more certain, and in less time, when soft soap was employed. Contact with one per cent. acetic acid was found to sterilize the fungus, while with a one per cent. solution of sodium carbonate its vitality survived the contact for three days. Sulphur ointment, in quarter strength, was found to sterilize in less than two hours. Ammoniated mercury ointment was likewise destructive, but in a somewhat longer time than with sulphur ointment. Citrine ointment was somewhat more rapid than the ammoniated mercury salve. Soaking in croton oil for variable periods exerted absolutely no effect upon the subsequent development of the fungus.

The conclusions to be drawn from these experiments are manifest. For example, the action of soap and water on the scalp, unless prolonged to a much greater extent than is at all likely, will not destroy the growth of even such spores as may happen to be living amongst the scales on the surface. It is also learned with definite certainty, what was fairly well understood on clinical grounds, that fat is not sufficient to destroy the vitality of the spores. Moreover, it is learned that an ointment which contains a comparatively small proportion of the ordinary antiseptic preparations that are used in the treatment of ringworm, is destructive to all the spores that come in contact with it, if the contact is at all prolonged, excepting, of course, the fungus that is deeper in the follicles than the ointment can penetrate.

MOLLUSCUM CONTAGIOSUM.

In the past thirteen years STELWAGON has met with (*Journal of Cutaneous and Genito-urinary Diseases*, February, 1889) thirty-two cases of this disease. These were observed in groups or series: two groups of thirteen and twelve in a children's home; a group of four cases in a children's hospital; and a group of three cases in a private family. Such experience would, as the writer suggests, point toward a contagious origin; and a study of these cases, and the cases reported by others regarding this point, seems to warrant the following: First, that the disease, while occasionally occurring upon covered regions, is practically seen either upon exposed parts or parts with which the hands must of necessity come more or less in contact, as the genitalia; second, that the disease is observed chiefly in children, and, as a rule, in children of the poorer classes; third, that while it is comparatively rare to meet with single cases, it is exceedingly common for the affection to be seen in groups or series, as in a family or in an institution; fourth, that in admitting its contagious nature, it must at the same time be acknowledged that apparently it possesses this property only in an extremely slight degree.

SUDDEN TURNING GRAY OF THE EYELASHES.

The case reported (*University Medical Magazine*, March 1889) by DE SCHWEINITZ occurred in a well-built, healthy brunette of eighteen years. The middle portion of the cilia of the right upper eyelid, and a number of those of the lower lid, turned white within a week. Both eyes were myopic, but otherwise healthy. No cause could be assigned for the change. The

case, the writer states, is exactly similar to that reported (*Centralblatt für praktische Augenheilk.*, January, 1888) by Hirschberg.

ON THE INCREASING PREVALENCE OF SCABIES, WITH REMARKS UPON TREATMENT.

In a late number (February 14th) of the *Boston Medical and Surgical Journal* appears a paper by WHITE, showing the increasing prevalence of scabies. Since 1881 there has been, as shown by the statistics of the service for skin diseases of the Massachusetts General Hospital, a gradual increase in the number of cases of this disease. This increase has been especially noticeable during the past five years; 68 cases being recorded in 1884, and 165 in 1888. The writer's private practice exhibits the same proportionate increase. As to the plan of treatment advised, the author's method is by an ointment containing the three most active parasitocides—sulphur, balsam of Peru, and naphthol, an application being made nightly for three consecutive nights.

A CLINICAL STUDY OF ALOPECIA AREATA, AND ITS TREATMENT.

In the *Medical Record* of March 2d, BULKLEY gives an analytical study of 119 personal cases of alopecia areata. According to this analysis, the disease is much more common among those of the well-to-do classes, the percentage being 0.45 for dispensary practice, and 1.54 among private patients. The writer thinks, and apparently with good reason, that this discrepancy is against the supposition of a parasitic origin, and favorable to the neurotic theory. Of the 119 cases, 78 were males and 41 females. The youngest patient was four and a half years old and the oldest sixty-nine; in the latter, however, several attacks in earlier life had occurred. The disease, according to the cases here tabulated, is relatively rare in the extremes of life. The largest number were observed between the ages of twenty and thirty, and almost as many between thirty and forty. As to the nature of the disease the author says: "From what has preceded, it is readily seen that I believe in the nervous origin and nature of alopecia areata. I may say that I have examined a large number of hairs taken from patients with this affection, and also scales scraped from the surface, and have always failed to detect parasitic elements; and I may add that in no single instance has the disease been presented to me in a manner to show contagion, as occurs constantly in ringworm and favus, and no two of my cases occurred in the same family."

Treatment, the author believes, should be both constitutional and local, more stress being placed upon the value of the former. The general treatment should be tonic and invigorating, with especial reference to the nervous system. Locally, stimulation of the diseased areas by suitable applications should be advised.

ACCIDENTAL RASHES IN TYPHOID FEVER.

Excluding purpura spots, vibices, taches blenâtres, and sudamina, which are not uncommon, MOORE groups (*Medical Press*, December 5, 1888; *British Journ. Derm.*, January 1889) the accidental rashes met with in typhoid fever

as: (1) Simple hyperæmia; (2) miliary eruptions; (3) erythematous rashes; and (4) urticaria. His conclusions, based upon personal study, are thus stated:

1. Not infrequently, in the course of typhoid fever, an adventitious eruption occurs, either miliary, urticarial, or erythematous. 2. When this happens, a wrong diagnosis of typhus, measles, or scarlatina, respectively, may be made, if account is not taken of the absence of the other objective and subjective symptoms of these diseases. 3. The erythematous rash is the most puzzling of all; but the prodromata of scarlet fever are absent, nor is the typical course of that disease observed. 4. This erythema scarlatiniforme is most likely to show itself at the end of the first or third week of typhoid fever. 5. In the former case, it probably depends upon a reactive inhibition of the vasomotor system of nerves: in the latter on septicæmia or secondary blood-poisoning; or both these may be present together. 6. The cases in which this rash appears are often severe, but its development is important rather from a diagnostic than from a prognostic point of view. 7. Hence no special line of treatment is required beyond that already employed for the safe conduct of the patient through the fever.

[Is it not possible that many of these accidental rashes which have heretofore been considered somewhat confusing and obscure, may, in the light of our present knowledge, be looked upon as medicinal?—Eds.]

PHTHIRIASIS PALPEBRARUM.

DE SCHWEINITZ adds another case (*University Magazine*, March, 1889) to the comparatively small number of cases of this condition on record. It was observed at Dr. Norris' eye service of the University Hospital, being the second case in an aggregate of ten thousand. The patient, a boy of three and a half years, was brought for relief of the local irritation and itching. "On superficial examination, the borders of the lids appeared covered with many small, dark scabs, which upon closer inspection resolved themselves into lice, clinging closely to the margins of the lids. The eggs, darker in color, were fastened with great regularity along the roots of the cilia, and in many instances the parasites themselves were partially buried head-foremost in the hair follicles."

OBSTETRICS.

UNDER THE CHARGE OF

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THE AGENTS MOST EFFECTIVE IN LESSENING THE MORTALITY-RATE OF PARTURITION.

GALABIN (*British Medical Journal*, March 16, 1889) calls attention to a period in English obstetric science when sanitary improvements in space,

ventilation, and cleanliness, reduced the death-rate of the British Lying-in Hospital to 3.2 per 1000 (1789 to 1800). This improvement was before the days of antiseptis, and equals the best results obtained to-day. It was of short duration, and was followed by a return to the high mortality-rate. It is a striking proof of the value of hygienic science, but Galabin finds in it no reason to decry antiseptis: both combined are indicated.

He adds a practical point in the use of bichloride of mercury. Owing to the tendency which this salt possesses to combine with various impurities in water, he prefers a concentrated solution with glycerine and dilute hydrochloric acid, which may be easily diluted for douches, and can be readily carried. His personal preference is for routine douches of carbolic solution after labor.

THE INDUCTION OF LABOR BY CERVICAL TAMPONS OF IODOFORM GAUZE.

DÖLGER (*Münchener medicinische Wochenschrift*, No. 13, 1889) reports two cases of contracted pelves in which labor was induced by repeatedly tamponing the cervix with iodoform gauze (ten per cent.). Comparison with other methods shows this to be more speedy, very efficient, and thoroughly antiseptic.

BREECH PRESENTATION, WITH DELAYED LABOR, THE CORD ENCIRCLING THE FETAL TRUNK.

BUDIN (*Archives de Tocologie*, No. 1, 1889) reports a case of breech presentation in which efforts to perform cephalic version failed. Labor being delayed, although labor pains were strong, the hand was introduced to bring down the breech. The cord was found encircling the trunk and passing beneath the axillæ. It was cautiously dislodged, and labor proceeded spontaneously. The insertion of the cord was velamentous.

Lefour has recently reported two cases in which cephalic version was prevented by the cord coiled about the neck. When the conditions for version are apparently favorable and judicious efforts fail, this complication may be suspected; the obstetrician should proceed cautiously, as rupture of the cord or detachment of the placenta and death of the fœtus may result.

TWO CASES OF TRIPLETS.

EISENHART (*Centralblatt für Gynäkologie*, No. 10, 1889) reports two cases of triplets at Munich. The first was a multipara, in whose family twin pregnancy had occurred. The liquor amnii was abundant; nephritis was also present. Labor lasted twenty-six and one-half hours; the children were girls, two born in vertex presentation, one in breech. There were two placentæ, connected only by the membranes, double amnion, one chorion; the pregnancy was twin, with the addition of a single conception. The mother recovered without complication; one child survived.

The second case was triple abortion at five months. The presentations were the same as in the first case; two children were girls, the third, a boy. There were one chorion and two amnions. Single pregnancy had existed,

complicated by twin pregnancy. In Munich, 1 triple birth in 5218 has been observed.

A SÄNGER-CÆSAREAN SECTION FOR SYMMETRICALLY CONTRACTED PELVIS.

CHAMPNEYS (*British Medical Journal*, April 13, 1889) reports a Säger operation for symmetrically contracted pelvis (antero-posterior diameter of pelvic inlet one and three-fourths inches) at seven months. The patient had induced labor and craniotomy at seven months in a previous pregnancy. The operation was performed when the os dilated. The deep sutures were silver, the superficial silk; the patient was sterilized by ligating the tubes (before they expand to the ampullæ) with kangaroo tendon, the ligature cutting through the tube. Uninterrupted recovery ensued.

In discussing the case (London Obstetrical Society, April 3d), PLAYFAIR preferred chromic acid catgut for deep sutures; he would have removed the ovaries. CULLINGWORTH and PHILLIPS used heavy and light silk for sutures. HEYWOOD SMITH would have allowed the patient to go to term and amputated the uterus. In closing, CHAMPNEYS defended sterilization by ligation of the tubes, because bad results, especially nervous derangements, followed oophorectomy in some cases. He preferred to turn out the uterus in operating, as hemorrhage was better controlled and stitches more rapidly taken.

PREGNANCY IN THE RIGHT UTERINE CORNU; LAPAROTOMY; RECOVERY.

SCLIFASSOWSKI (*Revue Générale de Clinique*, No. 13, 1889) reports the case of a patient pregnant the second time, in whom the signs of normal pregnancy were partly wanting; an abdominal tumor freely movable, and persistent flooding were present.

Laparotomy disclosed an ovoid tumor connected by a narrow pedicle with the right cornu of the uterus. The pedicle was ligated, and the tumor removed; it contained a partly decomposed fœtus at seven months; recovery followed without complications. The normal pregnancy had occurred in the left cornu of the uterus; in the abnormal pregnancy insemination was effected by the extra-uterine transmigration of the spermatozoa, as illustrated in animals.

A SUCCESSFUL CASE OF REPEATED CÆSAREAN SECTION.

SKUTSCH (*Archiv für Gynäkologie*, Band 34, Heft 1) reports a case of Cæsaean section, performed a second time in the clinic at Jena, for contracted rhachitic pelvis. On opening the abdomen the uterine and abdominal wall were found adherent; they were separated, and adhesions ligated. The mesentery was adherent to the uterine wall, and ligated in seven portions on the left side; in six on the right. Adhesions between the uterus and bladder were also separated. In the thickened peritoneal covering of the uterus were found three sutures of silver wire; in the subjacent uterine muscle two more; they were easily removed. An adhesion between the transverse colon, mesentery, and abdominal wall existed. The uterus was opened *in situ*, and the children (twins) extracted. An examination of the uterine wall showed that excision of the scar of the former operation was unnecessary, as the uterine

tissue was of normal thickness and consistence. Silk was used for all sutures, and hemorrhage was controlled by the elastic ligature about the cervix. The operation consumed seventy-eight minutes. Although the patient had marked albuminuria, she recovered; mild bronchitis and meteorismus, relieved by piercing the intestines with a trocar, complicated her recovery for a few days. Both children survived in good condition. This is the third recorded case of repeated modern Cæsarean section.

Skutsch also reports a case of Cæsarean section for contracted pelvis, with success. The case was without complications, and was performed by Säger's method.

EXTRA-UTERINE PREGNANCY, WITH RUPTURE OF THE FŒTAL SAC INTO THE BLADDER.

EHRENDORFER (*Wiener klinische Wochenschrift*, No. 13, 1889) reports the case of a multipara who first came to his clinic with a history of the suppression of menstruation, intermittent hemorrhages, the discharge of fœtal fragments, and incontinence of urine. The urethra was dilated; eleven fœtal bones were removed from the bladder, and the patient's symptoms were relieved. A large piece of bone lay in the posterior wall of the bladder which it was not deemed expedient to remove.

Nearly two years afterward the patient returned for the relief of vesical irritability. The urethra was dilated, and a piece of cranial bone one and a quarter inches in diameter was removed from a pocket in the posterior wall of the bladder; seven large bones and five fragments were then removed, the bladder douched with thymol solution and an iodoform bougie placed in the urethra. The patient recovered without incident, three years after the occurrence of the extra-uterine pregnancy.

Hecker has collected one hundred and thirty-two cases of extra-uterine pregnancy, seventy-six of which recovered: of these twenty-eight resulted in the discharge of the fœtus through the bowel, seventeen formed lithopædia, in fifteen the fœtus was discharged through the abdominal wall, in eleven by laparotomy, in three by incision into the vulva, and two are not accurately reported.

PLACENTAL INFARCTS AND NEPHRITIS.

ROSSIER (*Archiv für Gynäkologie*, Band 33, Heft 3) found infarcts of the placenta in 66.6 per cent. of cases of nephritis in the Stuttgart Maternity; in 104 cases 13.8 per cent. had white placental infarcts without albuminuria, 44 of these births were premature. In Basel he found placental infarcts in 55.5 per cent. of cases of nephritis, and in 18.6 per cent. of cases when albuminuria was absent.

Many of the cases were primiparæ; if nephritis occurs during subsequent pregnancies abortion or habitual fœtal death may follow, caused by placental disease. His clinical investigations were completed by microscopic examinations.

AN EXAMINATION OF THE UMBILICAL CORD FOR MICROÖRGANISMS.

CHOLMOGOROFF (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band 16, Heft 1) has examined the fœtal portion of the umbilical cord for micrococci.

At birth none were found: afterward pathogenic and non-pathogenic bacteria developed. The cord necroses after ligation by mummification or mortification; if mortification occurs, bacteria of all kinds develop in abundance. In mummification pathogenic bacteria develop about the abdominal extremity of the cord only; non-pathogenic bacteria are present in the remainder of the cord.

To dress the cord absorbent cotton, lanolin, and plaster of Paris were used. The plaster-of-Paris dressing favored mummification best of all, and hindered the development of pathogenic bacteria. The pathogenic bacteria found in the cord are identical with those of puerperal septicæmia; their development may occur independently of septicæmia in the mother or ophthalmia in the child.

THE RELATIVE WEIGHT OF THE FŒTAL ORGANS.

LOMER (*Zeitschrift für Geburtshülfe und Gynäkologie*, Band 16, Heft 1) has made extensive studies on the relative weight of fœtal organs; among his conclusions the following have practical interest. The kidneys do not hypertrophy immediately after birth; it is, therefore, probable that they were fully developed and functionally active during intra-uterine life. The liver and spleen vary so greatly in size in different individuals that caution must be exercised in diagnosing syphilis because of enlargement of these organs.

FŒTAL LEAD-POISONING.

LEGRAND and WINTER (*Wiener medicinische Presse*, No. 9, 1889) report the case of a fœtus born of parents who worked in a bookbindery, and who suffered from lead-poisoning. The mother had aborted repeatedly. Her sixth pregnancy resulted in the premature birth of an ill-developed fœtus, which survived two weeks. Post-mortem examination of its viscera showed renal cirrhosis; the liver was markedly cirrhotic, and lead in appreciable quantity was found in the liver.

A CLINICAL STUDY OF THE NORMAL AND DISEASED STOMACH IN INFANTS.

LEO (*Berliner klinische Wochenschrift*, No. 49, 1888) has examined the contents of the stomach in one hundred and thirty-four infants, by the sound and lavage. In healthy infants the reaction of the empty stomach was acid, neutral when water was introduced. The stomach contained saliva, mucus, hæmatine, and blood-corpuscles, the white especially abundant.

In nurslings the stomach is empty an hour after feeding; milk is found in the stomachs of bottle-fed infants two hours after a meal in a concentrated fluid which contains no pro-peptone.

Mother's milk is neutral in reaction in the stomach; cow's milk acid, the acidity being established fifteen minutes after a meal, the acid being HCl. The lab-ferment is present soon after birth; pro-peptone is present in thirty minutes after digestion begins; HCl is constantly formed. Pepsin was not found. Zymogen was recognized in three cases.

In pathological cases the stomach was strongly acid; Koch having shown that acids do not destroy microbes. The stomach was thoroughly douched

with sterilized water; to which an alcoholic solution of thymol was added. Milk and barley water or breast milk was then given. The best results were obtained in acute dyspepsia; the treatment stimulated the motor function of the stomach.

A NEW METHOD OF ARTIFICIAL FEEDING FOR INFANTS.

ESCHERICH (*Münchener medicinische Wochenschrift*, Nos. 13 and 14, 1889) finds the usual methods of artificial feeding for infants defective, because too great stress is laid upon the percentage of nourishment contained in a given mixture, to the neglect of the actual amount of nourishment obtained by the child.

As a basis of computation he takes an estimate of the average weight at birth at between seven and eight pounds; he tabulates the normal gain during the first year and calculates the amount of nourishment appropriate for each increment. Beginning with eight meals in twenty-four hours of one and a half ounces each, the child receives six meals at nine months, each six ounces; at ten months a mixed diet, embracing solids, is allowed. The mixture which Escherich prefers is sterilized cow's milk; to each four ounces a large teaspoonful of malt extract is added, because malt is less liable to fermentation than milk or cane sugar. This is diluted with sterilized water in progressively diminished quantities; he supplies fat by adding to the water a preparation of almond meal, one teaspoonful to four ounces of water. He believes that the usual methods of feeding result in the ingestion of much more food than is assimilated.

A NEW APPARATUS FOR STERILIZING MILK.

EISENBERG (*Wiener klinische Wochenschrift*, No. 12, 1889) has devised an apparatus for sterilizing milk consisting of a tin box containing a wire rack for twelve graduated nursing bottles. These are filled with milk in proper dilution and stoppered with cotton, as rubber corks do not bear heat well. The box is half filled with water and placed upon a stove or range. Milk is sterilized in thirty or forty minutes after the water boils. This apparatus costs one-half the price of Soxhlet's.

GYNECOLOGY.

UNDER THE CHARGE OF

HENRY C. COE, M.D., M.R.C.S.,
OF NEW YORK.

VAGINAL HYSTERECTOMY.

At a recent meeting of the Hamburg Obstetrical Society KÜMMELL reported eight cases of vaginal extirpation of the uterus, only three patients surviving twelve months after the operation. His experience had led him to believe that the induration so often felt at the sides of the diseased uterus was due to malignant infiltration, rather than to simple para- or perimetritis.

In the discussion following FRAENKEL stated his belief that it was impossible to make any positive statement regarding the curability of uterine cancer. In many cases that appeared to be favorable clinically the disease was really advanced. From a microscopical examination of five cancerous uteri he had been led to differ radically from Landau, who claimed that in cases of carcinoma of the portio vaginalis the corporal endometrium underwent sarcomatous degeneration.

SCHÜTZ, referring to Hofmeier's statistics, called attention to the fact that no patients survived the radical operation more than four years, whereas many lived longer after high amputation of the cervix.

STATISTICS OF VAGINAL HYSTERECTOMY.

TERRIER (*Revue de Chirurgie*, 1888, No. 5) reports eighteen cases, with four deaths due immediately to the operation. In three cases it was impossible to remove all the disease, and the patients soon died in consequence. Of the eleven patients who made a good recovery, only four were free from recurrence at the end of two years.

His deductions are as follows :

1. The operation is a serious one, and the mortality high.
2. Recurrence is the rule, and occurs soon after the operation.
3. Nevertheless, total extirpation is preferable to amputation of the cervix.
4. The compression-forceps (which are removed at the end of twenty-four hours) are safer than the ligature for controlling hemorrhage.

[In view of the writer's statistics, his recommendation of the radical operation seems somewhat contradictory.—ED.]

SUCCESSFUL EXTIRPATION OF A CANCEROUS UTERUS AT THE SIXTH MONTH OF PREGNANCY.

ZWEIFEL prefaces his account of this interesting case (*Centralblatt für Gynäkologie*, March 23, 1889) with a general review of the subject. According to Cohnstein, only twenty-nine per cent. of the pregnant women with this complication abort; even when the cervix and the lower uterine segment are extensively diseased, the pregnancy generally goes to full term. It is usually stated that cancer grows more rapidly under the influence of pregnancy, but the latter condition alone must not be considered; the effect of parturition and the puerperium should also be taken into account. The three factors together undoubtedly promote the increase of the growth.

It should be remembered that as long as the disease is limited to one lip of the cervix, and the latter is still dilatable, spontaneous delivery is possible. When, on the contrary, there is extensive infiltration labor is retarded, and either rupture of the uterus occurs, the woman dies undelivered, or the pains cease, and the retained foetus becomes decomposed.

With regard to the treatment during parturition different plans have been recommended. Bischoff has incised the indurated cervix or scraped away the cancerous tissue with success. GÖNNER recommended this as the routine practice to be pursued. The forceps have been used successfully. Version is generally regarded as objectionable on account of the danger of lacerating

the uterus. Craniotomy is equally dangerous. Cæsarean section has given good results when the child was living and viable.

ZWEIFEL thinks that if the patient is seen before labor sets in, it is better to scrape away the diseased tissue, an operation that does not injure the fœtus and does not necessarily cause abortion. Whenever the case is in the inoperable stage, and the life of the mother can be prolonged by curetting, we should operate without regard to the fate of the child. If the disease is limited to the cervix, and the patient is seen before the third month of pregnancy, the uterus should be extirpated *per vaginam*. After that period the organ is too large to remove in that way, and must be extirpated by laparotomy (Freund's operation). In either case a radical operation is indicated at once; to temporize until the child becomes viable is to wait until the disease has spread so that the mother will have no chance of recovery.

The following successful case is reported: The patient, *æt.* thirty-two, began to have severe pains in the lower part of the abdomen soon after entering upon her seventh pregnancy. Later profuse hemorrhages occurred, so that she entered the hospital supposing that abortion was imminent. On examination the fundus uteri was found to be at the umbilicus, and the fœtal heart could be heard. The portio vaginalis was much hypertrophied, and was the seat of an indurated growth which bled easily on being touched. Chloride of zinc was applied to the diseased surface, creolin injections being used after the formation of a slough.

Since the disease was limited to the cervix, the writer determined to extirpate the uterus. The patient was first placed in the lithotomy posture; the portio vaginalis was exposed, and was separated on all sides by the thermocautery. Douglas's pouch was then opened with the same instrument, and the vagina was packed with iodoform gauze. The patient was next put in the ordinary position for laparotomy, and a long incision was made in the abdominal wall, through which the uterus was rolled out, opened, and the child extracted, the cervix having been encircled with a temporary rubber cord in the usual manner. The broad ligaments were then ligated in sections, the cervix was transfixed and tied with silk, and the cord was removed. The body of the uterus (containing the placenta) was excised, after which the bladder was dissected off from the stump, the operation being facilitated by counter-pressure made *per vaginam* by an assistant. The ligatures were brought down into the vagina. The lithotomy posture was again assumed, the abdominal wound having been closed in the usual manner, and the stump was removed from below as in an ordinary vaginal hysterectomy. The wound in the fornix was partially closed with catgut sutures; a T-shaped drain was introduced, and the vagina was packed with iodoform gauze. The patient lost but little blood, and made a good recovery. The child, of course, lived but a few minutes.

The advantages claimed for this method are the fact that the abdomen is open only a short time, the slight hemorrhage, and the possibility of saving not only the mother but the child (when viable), since the life of the latter is not imperilled by the preliminary operation on the vagina. Previous Freund's operations, undertaken under the same conditions, resulted as follows: Schröder lost two patients, Bischoff one, and Spencer Wells saved the mother.

DISINFECTION OF THE GENITAL CANAL.

STEFFECK (*Centralblatt für Gynäkologie*, April 6, 1889) differs from Döderlein, who prefers creolin to corrosive sublimate as a vaginal injection. Creolin is undoubtedly a good deodorizer, especially in cases of cancer of the uterus, but the writer has not found a two-per-cent. solution to be sufficiently strong as a germicide. Even after following Günther's directions—i. e., scrubbing the vagina and external genitals thoroughly and then using a three-per-cent. solution of creolin, he found that the vagina speedily became infected with germs which were probably contained within the cervical canal. His deductions are based on careful bacteriological experiments. A three-per-cent. solution of carbolic acid, as well as sublimate, is a more active germicide.

ILEUS AFTER LAPAROTOMY.

KÜMMELL introduced this subject for discussion before the Hamburg Obstetrical Society (*Centralblatt für Gynäkologie*, April 13, 1889). Jaffé enumerated the causes of obstruction, viz., a simple bend in the gut, adhesion of the same resulting from injury to the peritoneum, and defective antisepsis. The human peritoneum was so much more sensitive to irritants than that of animals, that experiments in the latter did not, he thought, give a correct idea of the causes of peritonitis. It was safer not to use chemical antiseptics at all, but only materials sterilized by heat. Kümmell thought that the ordinary antiseptic solutions were non-irritant, although he had obtained just as good results without them. In his opinion, the use of the cautery was the principal cause of adhesions and ileus. In a case of obstruction, before resorting to laparotomy, he would administer opium, with the view of quieting the peristaltic movements of the gut above the point of occlusion. Clysmata were useless unless the obstruction was low down.

INDICATIONS FOR LAPAROTOMY ON ACCOUNT OF ACUTE PROCESSES.

GERSUNY (*Wiener med. Presse*, 1888, No. 46) includes under this head all cases in which life is suddenly endangered, and the physician must decide promptly whether to employ palliative treatment or to perform laparotomy. The principal indications are three, viz.: 1. Hemorrhage, due to the rupture of abdominal viscera, or the sac of an ectopic gestation, or to wounds of large vessels; 2. Localized peritonitis, especially that due to torsion of the pedicle of a tumor; 3. Sepsis, resulting from the escape of pus into the cavity (from rupture of an abscess), intestinal obstruction, or the presence of foreign bodies.

PELVIC ABSCESS AFTER LAPAROTOMY, COMMUNICATING WITH THE INTESTINE.

MURATOW (*Med. Rundschau*, 1888, No. 7) reports a case of salpingotomy, in the course of which a pyosalpinx was ruptured, the contents escaping into the cavity. The abdominal wound healed by first intention, but six months later an abscess developed at its lower angle, which opened and discharged with the pus several tapeworms. Per vaginam a tumor as large as an apple was felt at the site of the stump. This was opened through the fornix and a quantity

of pus was evacuated containing living proglottides. The entero-abdominal fistula closed in the course of four months; the tumor remained, but was much smaller. The writer thinks that the abscess developed within the folds of the broad ligament and communicated with both the external wound and the intestine.

GUTTURAL REFLEX AFTER OPERATIONS ON THE UTERUS AND OVARIES.

CHAMPIONNIÈRE (*Journ. de Méd. et de Chir.*, tome lx., May, 1888) calls attention to a peculiar phenomenon only noted after laparotomy for intra-pelvic troubles. Two or three days after the operation the patient is observed to be restless and sleepless. There is no elevation of temperature, but the pulse is accelerated, the respiration rapid and irregular, and there is a spasmodic cough, which in severe cases may lead to uncontrollable, and even fatal, vomiting. The disturbance may continue for a few or several weeks. The same reflex phenomena are observed early in pregnancy.

INVESTIGATIONS ON THE ROUND LIGAMENTS.

BEURNIER (*Gaz. des Hôpitaux*, 1889, Nos. 2 and 4) thinks that the reason why Alexander's operation is not popular in Germany is because the round ligaments are so difficult to identify, as they often split up after emerging from the inguinal canal. He estimates the average length of the ligament at from five to six inches, about an inch being allowed to the terminal portion. The average diameter of the cord near the uterus is one-twelfth of an inch, but that of the extra-inguinal portion is only one-twenty-fifth of an inch. The ligament will sustain an average weight of one pound four ounces without rupturing. At least one and one-half inches should be drawn out during the operation. Out of a hundred and thirteen cases which the writer collected there was a permanent cure in seventy-nine. [These measurements are certainly below those of other observers.—ED.]

THE ACTION OF GLYCERIN ON THE SECRETION OF THE VAGINA.

HERMANN, in a recent paper read before the London Obstetrical Society, reports the results of a series of experiments, conducted with the view of determining if the local application of glycerin to the vaginal mucous membrane caused an increased flow of mucus. The glycerin was introduced on pledgets of cotton-wool and in suppositories, the weight of the drug being carefully noted, as well as the weight of the subsequent vaginal discharge. The observer came to the conclusion that when the vaginal secretions were scanty glycerin tended to increase them, but if they were copious it caused no perceptible increase in the amount.

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